FLOOD INSURANCE STUDY

FEDERAL EMERGENCY MANAGEMENT AGENCY

VOLUME 1 OF 1

GONZALES COUNTY, TEXAS

AND INCORPORATED AREAS

COMMUNITY NAME	COMMUNITY NUMBER
GONZALES COUNTY, UNINCORPORATED AREAS	480253
GONZALES, CITY OF	480254
NIXON, CITY OF	481114
SMILEY, CITY OF*	481162
WAELDER, CITY OF	480255

*No Special Flood Hazard Areas Identified

FEMA

PRELIMINARY
4/7/2017

REVISED:

FLOOD INSURANCE STUDY NUMBER
48177CV000B

Version Number 2.3.3.3

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FLOOD INSURANCE STUDY REPORT
GONZALES COUNTY, TEXAS

SECTION 1.0 – INTRODUCTION

1.1 The National Flood Insurance Program

The National Flood Insurance Program (NFIP) is a voluntary Federal program that enables property owners in participating communities to purchase insurance protection against losses from flooding. This insurance is designed to provide an alternative to disaster assistance to meet the escalating costs of repairing damage to buildings and their contents caused by floods.

For decades, the national response to flood disasters was generally limited to constructing flood-control works such as dams, levees, sea-walls, and the like, and providing disaster relief to flood victims. This approach did not reduce losses nor did it discourage unwise development. In some instances, it may have actually encouraged additional development. To compound the problem, the public generally could not buy flood coverage from insurance companies, and building techniques to reduce flood damage were often overlooked.

In the face of mounting flood losses and escalating costs of disaster relief to the general taxpayers, the U.S. Congress created the NFIP. The intent was to reduce future flood damage through community floodplain management ordinances, and provide protection for property owners against potential losses through an insurance mechanism that requires a premium to be paid for the protection.

The U.S. Congress established the NFIP on August 1, 1968, with the passage of the National Flood Insurance Act of 1968. The NFIP was broadened and modified with the passage of the Flood Disaster Protection Act of 1973 and other legislative measures. It was further modified by the National Flood Insurance Reform Act of 1994 and the Flood Insurance Reform Act of 2004. The NFIP is administered by the Federal Emergency Management Agency (FEMA), which is a component of the Department of Homeland Security (DHS).

Participation in the NFIP is based on an agreement between local communities and the Federal Government. If a community adopts and enforces floodplain management regulations to reduce future flood risks to new construction and substantially improved structures in Special Flood Hazard Areas (SFHAs), the Federal Government will make flood insurance available within the community as a financial protection against flood losses. The community's floodplain management regulations must meet or exceed criteria established in accordance with Title 44 Code of Federal Regulations (CFR) Part 60, *Criteria for Land Management and Use*.

SFHAs are delineated on the community's Flood Insurance Rate Maps (FIRMs). Under the NFIP, buildings that were built before the flood hazard was identified on the community's FIRMs are generally referred to as "Pre-FIRM" buildings. When the NFIP was created, the U.S. Congress recognized that insurance for Pre-FIRM buildings would be prohibitively expensive if the premiums were not subsidized by the Federal

Government. Congress also recognized that most of these floodprone buildings were built by individuals who did not have sufficient knowledge of the flood hazard to make informed decisions. The NFIP requires that full actuarial rates reflecting the complete flood risk be charged on all buildings constructed or substantially improved on or after the effective date of the initial FIRM for the community or after December 31, 1974, whichever is later. These buildings are generally referred to as “Post-FIRM” buildings.

1.2 Purpose of this Flood Insurance Study Report

This Flood Insurance Study (FIS) Report revises and updates information on the existence and severity of flood hazards for the study area. The studies described in this report developed flood hazard data that will be used to establish actuarial flood insurance rates and to assist communities in efforts to implement sound floodplain management.

In some states or communities, floodplain management criteria or regulations may exist that are more restrictive than the minimum Federal requirements. Contact your State NFIP Coordinator to ensure that any higher State standards are included in the community’s regulations.

1.3 Jurisdictions Included in the Flood Insurance Study Project

This FIS Report covers the entire geographic area of Gonzales County, Texas.

The jurisdictions that are included in this project area, along with the Community Identification Number (CID) for each community and the United States Geological Survey (USGS) 8-digit Hydrologic Unit Code (HUC-8) sub-basins affecting each, are shown in Table 1. The FIRM panel numbers that affect each community are listed. If the flood hazard data for the community is not included in this FIS report, the location of that data is identified

Jurisdictions that have no identified SFHAs as of the effective date of this study are indicated in the table. Changed conditions in these communities (such as urbanization or annexation) or the availability of new scientific or technical data about flood hazards could make it necessary to determine SFHAs in these jurisdictions in the future.

Table 1: Listing of NFIP Jurisdictions

Community	CID	HUC-8 Sub-Basin(s)	Located on FIRM Panel(s)	If Not Included, Location of Flood Hazard Data
Gonzales County, Unincorporated Areas	480253	12100101, 12100202, 12100203, 12100204	48177C0025C[3] 48177C0050C 48177C0070D 48177C0075D[3] 48177C0090D 48177C0095D 48177C0100D[3] 48177C0125C 48177C0135C 48177C0150C 48177C0175C 48177C0200C 48177C0205D 48177C0210D 48177C0215D 48177C0220D 48177C0240D 48177C0245C 48177C0250C 48177C0275C 48177C0300C 48177C0325C 48177C0350C 48177C0375D 48177C0380D 48177C0400D 48177C0425C 48177C0450C[3] 48177C0475C 48177C0500C 48177C0525C 48177C0550C 48177C0575C 48177C0600C 48177C0625C 48177C0650C 48177C0675C 48177C0700C[3] 48177C0725C[3]	
Gonzales, City of	480254	12100202	48177C0240D 48177C0245C 48177C0380D 48177C0400D	
Nixon, City of[1]	481114	12100202	48177C0475C	
Smiley, City of[2]	481162	12100202	48177C0500C	

Table 1: Listing of NFIP Jurisdictions, continued

Community	CID	HUC-8 Sub-Basin(s)	Located on FIRM Panel(s)	If Not Included, Location of Flood Hazard Data
Waelder, City of	480255	12100202	48177C0135C 48177C0150C	

[1]Community is mapped in multiple counties. This FIS only covers the portion within Gonzales County

[2]No Special Flood Hazard Areas identified

[3]Panel Not Printed

1.4 Considerations for using this Flood Insurance Study Report

The NFIP encourages State and local governments to implement sound floodplain management programs. To assist in this endeavor, each FIS Report provides floodplain data, which may include a combination of the following: 10-, 4-, 2-, 1-, and 0.2-percent annual chance flood elevations (the 1% annual chance flood elevation is also referred to as the Base Flood Elevation (BFE)); delineations of the 1% annual chance and 0.2% annual chance floodplains; and 1% annual chance floodway. This information is presented on the FIRM and/or in many components of the FIS Report, including Flood Profiles, Floodway Data tables, Summary of Non-Coastal Stillwater Elevations tables, and Coastal Transect Parameters tables (not all components may be provided for a specific FIS).

This section presents important considerations for using the information contained in this FIS Report and the FIRM, including changes in format and content. Figures 1, 2, and 3 present information that applies to using the FIRM with the FIS Report.

- Part or all of this FIS Report may be revised and republished at any time. In addition, part of this FIS Report may be revised by a Letter of Map Revision (LOMR), which does not involve republication or redistribution of the FIS Report. Refer to Section 6.5 of this FIS Report for information about the process to revise the FIS Report and/or FIRM.

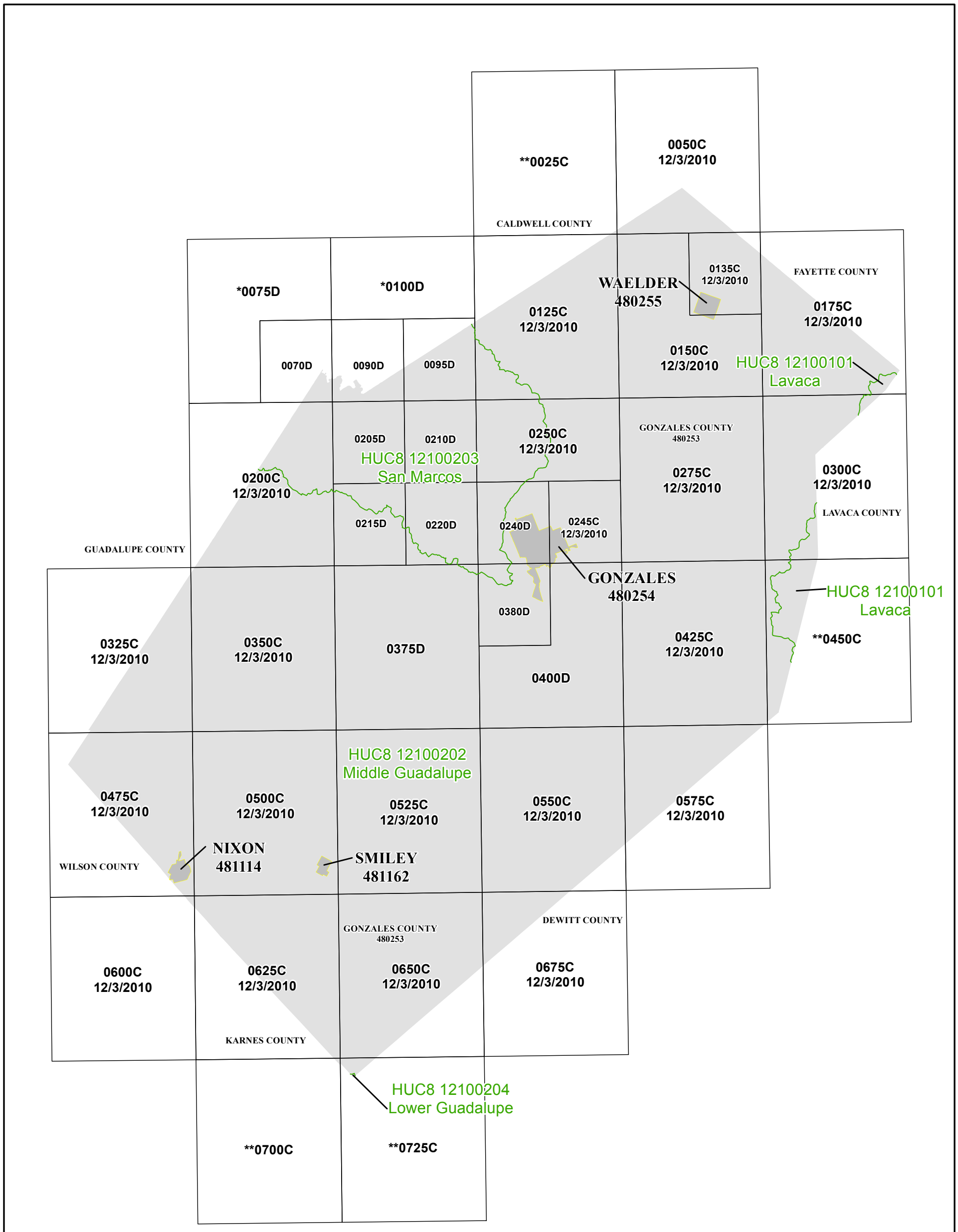
  It is, therefore, the responsibility of the user to consult with community officials by contacting the community repository to obtain the most current FIS Report components. Communities participating in the NFIP have established repositories of flood hazard data for floodplain management and flood insurance purposes. Community map repository addresses are provided in Table 31, “Map Repositories,” within this FIS Report.

- New FIS Reports are frequently developed for multiple communities, such as entire counties. A countywide FIS Report incorporates previous FIS Reports for individual communities and the unincorporated area of the county (if not jurisdictional) into a single document and supersedes those documents for the purposes of the NFIP.

- FEMA has developed a *Guide to Flood Maps* (FEMA 258) and online tutorials to assist users in accessing the information contained on the FIRM. These include how to read panels and step-by-step instructions to obtain specific information. To obtain this guide and other assistance in using the FIRM, visit the FEMA Web site at www.fema.gov/online-tutorials.

The FIRM Index in Figure 1 shows the overall FIRM panel layout within Gonzales County, and also displays the panel number and effective date for each FIRM panel in the county. Other information shown on the FIRM Index includes community boundaries, watershed boundaries, and USGS HUC-8 codes.

Figure 1: FIRM Panel Index



ATTENTION: The corporate limits shown on this FIRM Index are based on the best information available at the time of publication. As such, they may be more current than those shown on FIRM panels issued before 12/3/2010

N

1 inch = 26,320 feet 1:315,842

0 14,000 28,000 56,000 Feet

Map Projection:
Texas State Plane South Central (FIPS Zone 4204);
North American Datum 1983

THE INFORMATION DEPICTED ON THIS MAP AND SUPPORTING DOCUMENTATION ARE ALSO AVAILABLE IN DIGITAL FORMAT AT
HTTP://MSC.FEMA.GOV

SEE FLOOD INSURANCE STUDY FOR ADDITIONAL INFORMATION

*PANEL NOT PRINTED - AREA NOT INCLUDED
**PANEL NOT PRINTED -NO SPECIAL FLOOD HAZARD AREAS

NATIONAL FLOOD INSURANCE PROGRAM
FLOOD INSURANCE RATE MAP PANEL INDEX

GONZALES COUNTY, TEXAS and Incorporated Areas

PANELS PRINTED: 0050, 0070, 0090, 0095, 0125, 0135, 0150, 0175, 0200, 0205, 0210, 0215, 0220, 0240, 0245, 0250, 0275, 0300, 0325, 0350, 0375, 0380, 0400, 0425, 0475, 0500, 0525, 0550, 0575, 0600, 0625, 0650, 0675

PRELIMINARY
4/7/2017

FEMA

MAP NUMBER
48177CIND0B

MAP REVISED

Each FIRM panel may contain specific notes to the user that provide additional information regarding the flood hazard data shown on that map. However, the FIRM panel does not contain enough space to show all the notes that may be relevant in helping to better understand the information on the panel. Figure 2 contains the full list of these notes.

Figure 2: FIRM Notes to Users

NOTES TO USERS

For information and questions about this map, available products associated with this FIRM including historic versions of this FIRM, how to order products, or the National Flood Insurance Program in general, please call the FEMA Map Information eXchange at 1-877-FEMA-MAP (1-877-336-2627) or visit the FEMA Flood Map Service Center website at msc.fema.gov. Available products may include previously issued Letters of Map Change, a Flood Insurance Study Report, and/or digital versions of this map. Many of these products can be ordered or obtained directly from the website. Users may determine the current map date for each FIRM panel by visiting the FEMA Flood Map Service Center website or by calling the FEMA Map Information eXchange.

Communities annexing land on adjacent FIRM panels must obtain a current copy of the adjacent panel as well as the current FIRM Index. These may be ordered directly from the Flood Map Service Center at the number listed above.

For community and countywide map dates, refer to Table 28 in this FIS Report.

To determine if flood insurance is available in the community, contact your insurance agent or call the National Flood Insurance Program at 1-800-638-6620.

PRELIMINARY FIS REPORT: FEMA maintains information about map features, such as street locations and names, in or near designated flood hazard areas. Requests to revise information in or near designated flood hazard areas may be provided to FEMA during the community review period, at the final Consultation Coordination Officer's meeting, or during the statutory 90-day appeal period. Approved requests for changes will be shown on the final printed FIRM.

The map is for use in administering the NFIP. It may not identify all areas subject to flooding, particularly from local drainage sources of small size. Consult the community map repository to find updated or additional flood hazard information.

BASE FLOOD ELEVATIONS: For more detailed information in areas where Base Flood Elevations (BFEs) and/or floodways have been determined, consult the Flood Profiles and Floodway Data and/or Summary of Non-Coastal Stillwater Elevations tables within this FIS Report. Use the flood elevation data within the FIS Report in conjunction with the FIRM for construction and/or floodplain management.

FLOODWAY INFORMATION: Boundaries of the floodways were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the National Flood Insurance Program. Floodway widths and other pertinent floodway data are provided in the FIS Report for this jurisdiction.

Figure 2. FIRM Notes to Users

FLOOD CONTROL STRUCTURE INFORMATION: Certain areas not in Special Flood Hazard Areas may be protected by flood control structures. Refer to Section 4.3 "Non-Levee Flood Protection Measures" of this FIS Report for information on flood control structures for this jurisdiction.

PROJECTION INFORMATION: The projection used in the preparation of the map was Texas State Plane south central zone (FIPSZONE 4204)**.** The horizontal datum was the North American Datum of 1983 NAD83, GRS1980 spheroid. Differences in datum, spheroid, projection or State Plane zones used in the production of FIRMs for adjacent jurisdictions may result in slight positional differences in map features across jurisdiction boundaries. These differences do not affect the accuracy of the FIRM.

ELEVATION DATUM: Flood elevations on the FIRM are referenced to the North American Vertical Datum of 1988**.** These flood elevations must be compared to structure and ground elevations referenced to the same vertical datum. For information regarding conversion between the National Geodetic Vertical Datum of 1929 and the North American Vertical Datum of 1988**,** visit the National Geodetic Survey website at www.ngs.noaa.gov/ or contact the National Geodetic Survey at the following address:

NGS Information Services
NOAA, N/NGS12
National Geodetic Survey
SSMC-3, #9202
1315 East-West Highway
Silver Spring, Maryland 20910-3282
(301) 713-3242

Local vertical monuments may have been used to create the map. To obtain current monument information, please contact the appropriate local community listed in Table 31 of this FIS Report.

BASE MAP INFORMATION: Base map information shown on the FIRM was provided by Texas Natural Resource Information System and U.S. Department of Commerce. For information about base maps, refer to Section 6.2 “Base Map” in this FIS Report.

The map reflects more detailed and up-to-date stream channel configurations than those shown on the previous FIRM for this jurisdiction. The floodplains and floodways that were transferred from the previous FIRM may have been adjusted to conform to these new stream channel configurations. As a result, the Flood Profiles and Floodway Data tables may reflect stream channel distances that differ from what is shown on the map.

Corporate limits shown on the map are based on the best data available at the time of publication. Because changes due to annexations or de-annexations may have occurred after the map was published, map users should contact appropriate community officials to verify current corporate limit locations.

NOTES FOR FIRM INDEX

REVISIONS TO INDEX: As new studies are performed and FIRM panels are updated within Gonzales County, Texas, corresponding revisions to the FIRM Index will be incorporated within the FIS Report to reflect the effective dates of those panels. Please refer to Table 28 of this FIS Report to determine the most recent FIRM revision date for each community. The most recent FIRM panel effective date will correspond to the most recent index date.
ATTENTION: The corporate limits shown on this FIRM Index are based on the best information available at the time of publication. As such, they may be more current than those shown on FIRM panels issued before *12/3/2010*.

Figure 2. FIRM Notes to Users

SPECIAL NOTES FOR SPECIFIC FIRM PANELS

This Notes to Users section was created specifically for Gonzales County, Texas, effective TBD.

FLOOD RISK REPORT: A Flood Risk Report (FRR) may be available for many of the flooding sources and communities referenced in this FIS Report. The FRR is provided to increase public awareness of flood risk by helping communities identify the areas within their jurisdictions that have the greatest risks. Although non-regulatory, the information provided within the FRR can assist communities in assessing and evaluating mitigation opportunities to reduce these risks. It can also be used by communities developing or updating flood risk mitigation plans. These plans allow communities to identify and evaluate opportunities to reduce potential loss of life and property. However, the FRR is not intended to be the final authoritative source of all flood risk data for a project area; rather, it should be used with other data sources to paint a comprehensive picture of flood risk.

Each FIRM panel contains an abbreviated legend for the features shown on the maps. However, the FIRM panel does not contain enough space to show the legend for all map features. Figure 3 shows the full legend of all map features. Note that not all of these features may appear on the FIRM panels in Gonzales County.

Figure 3: Map Legend for FIRM

SPECIAL FLOOD HAZARD AREAS: *The 1% annual chance flood, also known as the base flood or 100-year flood, has a 1% chance of happening or being exceeded each year. Special Flood Hazard Areas are subject to flooding by the 1% annual chance flood. The Base Flood Elevation is the water surface elevation of the 1% annual chance flood. The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights. See note for specific types. If the floodway is too narrow to be shown, a note is shown.*

	Special Flood Hazard Areas subject to inundation by the 1% annual chance flood (Zones A, AE, AH, AO, AR, A99, V and VE)
Zone A	The flood insurance rate zone that corresponds to the 1% annual chance floodplains. No base (1% annual chance) flood elevations (BFEs) or depths are shown within this zone.
Zone AE	The flood insurance rate zone that corresponds to the 1% annual chance floodplains. Base flood elevations derived from the hydraulic analyses are shown within this zone.
Zone AH	The flood insurance rate zone that corresponds to the areas of 1% annual chance shallow flooding (usually areas of ponding) where average depths are between 1 and 3 feet. Whole-foot BFEs derived from the hydraulic analyses are shown at selected intervals within this zone.
Zone AO	The flood insurance rate zone that corresponds to the areas of 1% annual chance shallow flooding (usually sheet flow on sloping terrain) where average depths are between 1 and 3 feet. Average whole-foot depths derived from the hydraulic analyses are shown within this zone.
Zone AR	The flood insurance rate zone that corresponds to areas that were formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.
Zone A99	The flood insurance rate zone that corresponds to areas of the 1% annual chance floodplain that will be protected by a Federal flood protection system where construction has reached specified statutory milestones. No base flood elevations or flood depths are shown within this zone.
Zone V	The flood insurance rate zone that corresponds to the 1% annual chance coastal floodplains that have additional hazards associated with storm waves. Base flood elevations are not shown within this zone.
Zone VE	Zone VE is the flood insurance rate zone that corresponds to the 1% annual chance coastal floodplains that have additional hazards associated with storm waves. Base flood elevations derived from the coastal analyses are shown within this zone as static whole-foot elevations that apply throughout the zone.

Figure 3: Map Legend for FIRM

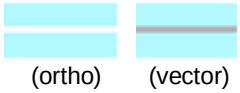
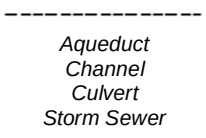
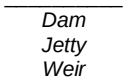
	Regulatory Floodway determined in Zone AE.
OTHER AREAS OF FLOOD HAZARD	
	Shaded Zone X: Areas of 0.2% annual chance flood hazards and areas of 1% annual chance flood hazards with average depths of less than 1 foot or with drainage areas less than 1 square mile.
	Future Conditions 1% Annual Chance Flood Hazard – Zone X: The flood insurance rate zone that corresponds to the 1% annual chance floodplains that are determined based on future-conditions hydrology. No base flood elevations or flood depths are shown within this zone.
	Area with Reduced Flood Risk due to Levee: Areas where an accredited levee, dike, or other flood control structure has reduced the flood risk from the 1% annual chance flood.
	Area with Flood Risk due to Levee: Areas where a non-accredited levee, dike, or other flood control structure is shown as providing protection to less than the 1% annual chance flood.
OTHER AREAS	
	Zone D (Areas of Undetermined Flood Hazard): The flood insurance rate zone that corresponds to unstudied areas where flood hazards are undetermined, but possible.
	Unshaded Zone X: Areas of minimal flood hazard.
FLOOD HAZARD AND OTHER BOUNDARY LINES	
	Flood Zone Boundary (white line on ortho-photography-based mapping; gray line on vector-based mapping)
	Limit of Study
	Jurisdiction Boundary
	Limit of Moderate Wave Action (LiMWA): Indicates the inland limit of the area affected by waves greater than 1.5 feet
GENERAL STRUCTURES	
	Channel, Culvert, Aqueduct, or Storm Sewer
	Dam, Jetty, Weir

Figure 3: Map Legend for FIRM

	Levee, Dike, or Floodwall
Bridge	Bridge
COASTAL BARRIER RESOURCES SYSTEM (CBRS) AND OTHERWISE PROTECTED AREAS (OPA): *CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.*	
CBRS AREA 09/30/2009	Coastal Barrier Resources System Area: Labels are shown to clarify where this area shares a boundary with an incorporated area or overlaps with the floodway.
OTHERWISE PROTECTED AREA 09/30/2009	Otherwise Protected Area
REFERENCE MARKERS	
22.0	River mile Markers
CROSS SECTION & TRANSECT INFORMATION	
B 20.2	Lettered Cross Section with Regulatory Water Surface Elevation (BFE)
5280 21.1	Numbered Cross Section with Regulatory Water Surface Elevation (BFE)
17.5	Unlettered Cross Section with Regulatory Water Surface Elevation (BFE)
8	Coastal Transect
	Profile Baseline: Indicates the modeled flow path of a stream and is shown on FIRM panels for all valid studies with profiles or otherwise established base flood elevation.
	Coastal Transect Baseline: Used in the coastal flood hazard model to represent the 0.0-foot elevation contour and the starting point for the transect and the measuring point for the coastal mapping.
513	Base Flood Elevation Line
ZONE AE (EL 16)	Static Base Flood Elevation value (shown under zone label)

Figure 3: Map Legend for FIRM

ZONE AO (DEPTH 2)	Zone designation with Depth
ZONE AO (DEPTH 2) (VEL 15 FPS)	Zone designation with Depth and Velocity
BASE MAP FEATURES	
Missouri Creek	River, Stream or Other Hydrographic Feature
234	Interstate Highway
234	U.S. Highway
234	State Highway
234	County Highway
MAPLE LANE	Street, Road, Avenue Name, or Private Drive if shown on Flood Profile
RAILROAD	Railroad
	Horizontal Reference Grid Line
	Horizontal Reference Grid Ticks
+	Secondary Grid Crosshairs
Land Grant	Name of Land Grant
7	Section Number
R. 43 W. T. 22 N.	Range, Township Number
$^{42}76^{000m}$E	Horizontal Reference Grid Coordinates (UTM)
365000 FT	Horizontal Reference Grid Coordinates (State Plane)
80° 16' 52.5"	Corner Coordinates (Latitude, Longitude)

SECTION 2.0 – FLOODPLAIN MANAGEMENT APPLICATIONS

2.1 Floodplain Boundaries

To provide a national standard without regional discrimination, the 1% annual chance (100-year) flood has been adopted by FEMA as the base flood for floodplain management purposes. The 0.2% annual chance (500-year) flood is employed to indicate additional areas of flood hazard in the community.

Each flooding source included in the project scope has been studied and mapped using professional engineering and mapping methodologies that were agreed upon by FEMA and Gonzales County as appropriate to the risk level. Flood risk is evaluated based on factors such as known flood hazards and projected impact on the built environment. Engineering analyses were performed for each studied flooding source to calculate its 1% annual chance flood elevations; elevations corresponding to other floods (e.g. 10-, 4-, 2-, 0.2-percent annual chance, etc.) may have also been computed for certain flooding sources. Engineering models and methods are described in detail in Section 5.0 of this FIS Report. The modeled elevations at cross sections were used to delineate the floodplain boundaries on the FIRM; between cross sections, the boundaries were interpolated using elevation data from various sources. More information on specific mapping methods is provided in Section 6.0 of this FIS Report.

Depending on the accuracy of available topographic data (Table 23), study methodologies employed (Section 5.0), and flood risk, certain flooding sources may be mapped to show both the 1% and 0.2% annual chance floodplain boundaries, regulatory water surface elevations (BFEs), and/or a regulatory floodway. Similarly, other flooding sources may be mapped to show only the 1% annual chance floodplain boundary on the FIRM, without published water surface elevations. In cases where the 1% and 0.2% annual chance floodplain boundaries are close together, only the 1% annual chance floodplain boundary is shown on the FIRM. Figure 3, “Map Legend for FIRM”, describes the flood zones that are used on the FIRMs to account for the varying levels of flood risk that exist along flooding sources within the project area. Table 2 and Table 3 indicate the flood zone designations for each flooding source and each community within Gonzales County, respectively.

Table 2, “Flooding Sources Included in this FIS Report,” lists each flooding source, including its study limits, affected communities, mapped zone on the FIRM, and the completion date of its engineering analysis from which the flood elevations on the FIRM and in the FIS Report were derived. Descriptions and dates for the latest hydrologic and hydraulic analyses of the flooding sources are shown in Table 13. Floodplain boundaries for these flooding sources are shown on the FIRM (published separately) using the symbology described in Figure 3. On the map, the 1% annual chance floodplain corresponds to the SFHAs. The 0.2% annual chance floodplain shows areas that, although out of the regulatory floodplain, are still subject to flood hazards.

Small areas within the floodplain boundaries may lie above the flood elevations but cannot be shown due to limitations of the map scale and/or lack of detailed topographic

data. The procedures to remove these areas from the SFHA are described in Section 6.5 of this FIS Report.

Table 2: Flooding Sources Included in this FIS Report

Flooding Source	Community	Downstream Limit	Upstream Limit	HUC-8 Sub-Basin(s)	Length (mi) (streams or coastlines)	Area (mi^2) (estuaries or ponding)	Floodway (Y/N)	Zone shown on FIRM	Date of Analysis
Baldridge Creek	Gonzales County, Unincorporated Areas; Waelder, City of	Approximately 1.1 miles downstream of US Highway 97	Approximately 0.3 miles upstream of US Highway 90	12100202	2.06		Y	AE	1978
Baldridge Creek and tributaries	Gonzales County, Unincorporated Areas	At the confluence with Peach Creek	Approximately 3.2 miles upstream of US 90	12100202	32.5		N	A	1981
Bee Branch and tributaries	Gonzales County, Unincorporated Areas	At the confluence with Sandy Fork	Approximately 2.5 miles upstream of County Road 459	12100202	13.4		N	A	1981
Big Fivemile Creek and tributaries	Gonzales County, Unincorporated Areas	At the confluence with Peach Creek	Gonzales County boundary	12100202	13.2		N	A	1981
Buck Branch and tributaries	Gonzales County, Unincorporated Areas	At the confluence with Sandy Fork	Gonzales County boundary	12100202	8.4		N	A	1981
Copperas Creek and tributaries	Gonzales County, Unincorporated Areas	At the confluence with Peach Creek	Gonzales County boundary	12100202	25.3		N	A	1981
Denton Creek and tributaries	Gonzales County, Unincorporated Areas	At the confluence with Peach Creek	At County Road 284	12100202	62.0		N	A	1981
Elm Creek and tributaries	Gonzales County, Unincorporated Areas	At the confluence with Sandies Creek	Gonzales County boundary	12100202	71.2		N	A	1981
Fivemile Creek and tributaries	Gonzales County, Unincorporated Areas	At the confluence with Sandies Creek	Approximately 0.5 miles upstream of County Road 137	12100202	118.7		N	A	1981
Guadalupe River	Gonzales County, Unincorporated Areas	Approximately 1.0 miles downstream of US Highway 183	Approximately 1.9 miles upstream of US Highway 183	12100202	53.7		Y	AE	1978
Guadalupe River and tributaries	Gonzales County, Unincorporated Areas	At the Gonzales County boundary	At the downstream limit of the detailed study	12100202	111.2		N	A	1981

Table 2: Flooding Sources Included in this FIS Report, continued

Flooding Source	Community	Downstream Limit	Upstream Limit	HUC-8 Sub-Basin(s)	Length (mi) (streams or coastlines)	Area (mi^2) (estuaries or ponding)	Floodway (Y/N)	Zone shown on FIRM	Date of Analysis
Guadalupe River and tributaries	Gonzales County, Unincorporated Areas	At the upstream limit of the detailed study	Gonzales County boundary	12100202	17.0		N	A	1981
Kerr Creek	Gonzales, City of	Approximately 70 feet downstream of Saint Louis Street	Saint Lawrence Street	12100202	0.13		Y	AE	1978
Peach Creek and tributaries	Gonzales County, Unincorporated Areas	At the confluence with Guadalupe River	Gonzales County boundary	12100202	111.75		N	A	1981
Salty Creek and tributaries	Gonzales County, Unincorporated Areas	At the confluence with Fivemile Creek	At the confluence with Sugar Creek	12100202	56.2		N	A	1981
Sandies Creek and tributaries	Gonzales County, Unincorporated Areas	Gonzales County southern boundary	Gonzales County northern boundary	12100202	106.8		N	A	1981
Sandy Fork and tributaries	Gonzales County, Unincorporated Areas	At the confluence with Peach Creek	Gonzales County boundary	12100202	75.5		N	A	1981
San Marcos River	Gonzales County, Unincorporated Areas; Gonzales, City of	Confluence with Guadalupe River	Gonzales County boundary	12100203	32.0		Y	AE	2016
San Marcos River tributaries	Gonzales County, Unincorporated Areas	Various limits	Various limits	12100203	40.0		N	A	1981
South Denton Creek	Gonzales County, Unincorporated Areas	Gonzales County boundary	Approximately 0.8 miles upstream of County Road 289	12100202	19.1		N	A	1981
Sugar Creek and tributaries	Gonzales County, Unincorporated Areas	At the confluence with Salty Creek	At State Highway 97	12100202	46.8		N	A	1981

Table 2: Flooding Sources Included in this FIS Report, continued

Flooding Source	Community	Downstream Limit	Upstream Limit	HUC-8 Sub-Basin(s)	Length (mi) (streams or coastlines)	Area (mi^2) (estuaries or ponding)	Floodway (Y/N)	Zone shown on FIRM	Date of Analysis
Tinsley Creek	Gonzales County, Unincorporated Areas; Gonzales, City of	Approximately 850 feet downstream of Saint Vincent Street	Approximately 150 feet upstream of Sarah Dewitt Drive	12100202	1.88		Y	AE	1978
Waelder Branch	Waelder, City of	Approximately 0.5 miles downstream of Ralph Bunch	Approximately 0.4 miles upstream of North Fifth Street	12100202	1.48		Y	AE	1978
West Drain	Waelder, City of	At the confluence of Baldridge Creek	2,176 feet above the confluence of Baldridge Creek	12100202	0.4		N	A	1977

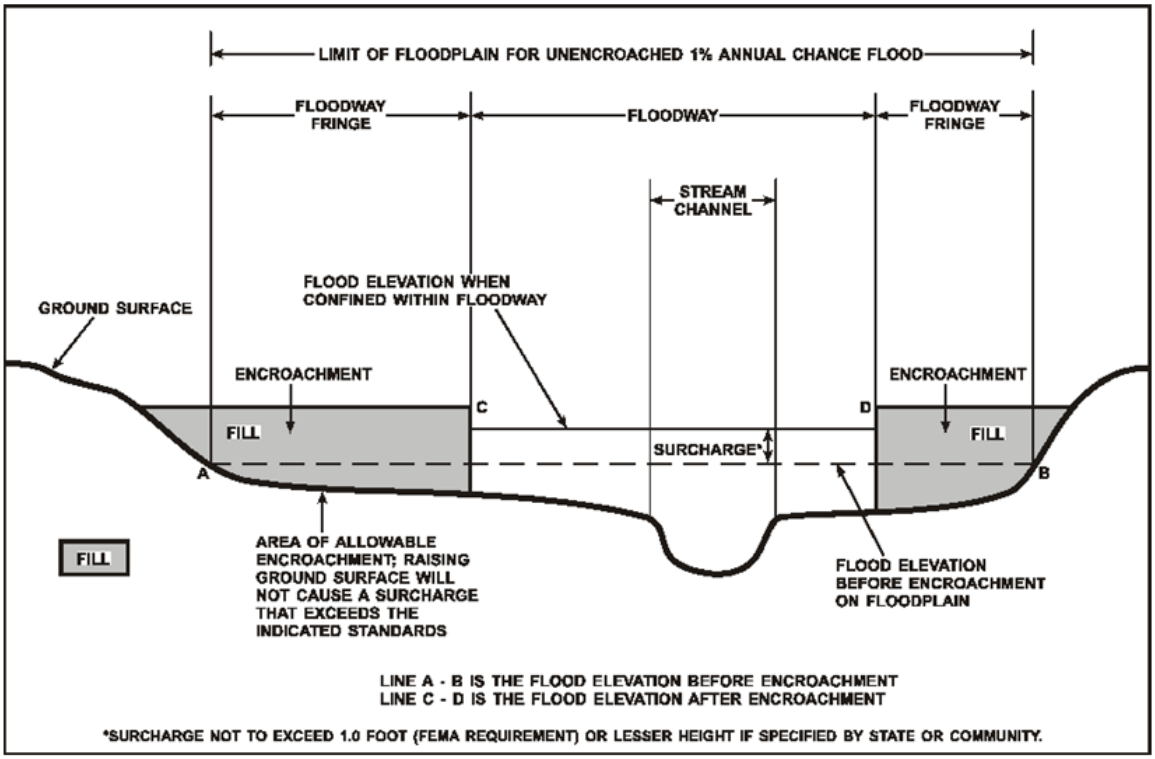
2.2 Floodways

Encroachment on floodplains, such as structures and fill, reduces flood-carrying capacity, increases flood heights and velocities, and increases flood hazards in areas beyond the encroachment itself. One aspect of floodplain management involves balancing the economic gain from floodplain development against the resulting increase in flood hazard.

For purposes of the NFIP, a floodway is used as a tool to assist local communities in balancing floodplain development against increasing flood hazard. With this approach, the area of the 1% annual chance floodplain on a river is divided into a floodway and a floodway fringe based on hydraulic modeling. The floodway is the channel of a stream, plus any adjacent floodplain areas, that must be kept free of encroachment in order to carry the 1% annual chance flood. The floodway fringe is the area between the floodway and the 1% annual chance floodplain boundaries where encroachment is permitted. The floodway must be wide enough so that the floodway fringe could be completely obstructed without increasing the water surface elevation of the 1% annual chance flood more than 1 foot at any point. Typical relationships between the floodway and the floodway fringe and their significance to floodplain development are shown in Figure 4.

To participate in the NFIP, Federal regulations require communities to limit increases caused by encroachment to 1.0 foot, provided that hazardous velocities are not produced. The floodways in this project are presented to local agencies as minimum standards that can be adopted directly or that can be used as a basis for additional floodway projects.

Figure 4: Floodway Schematic



Floodway widths presented in this FIS Report and on the FIRM were computed at cross sections. Between cross sections, the floodway boundaries were interpolated. For certain stream segments, floodways were adjusted so that the amount of floodwaters conveyed on each side of the floodplain would be reduced equally. The results of the floodway computations have been tabulated for selected cross sections and are shown in Table 24, “Floodway Data.”

All floodways that were developed for this Flood Risk Project are shown on the FIRM using the symbology described in Figure 3. In cases where the floodway and 1% annual chance floodplain boundaries are either close together or collinear, only the floodway boundary has been shown on the FIRM. For information about the delineation of floodways on the FIRM, refer to Section 6.3.

2.3 Base Flood Elevations

The hydraulic characteristics of flooding sources were analyzed to provide estimates of the elevations of floods of the selected recurrence intervals. The Base Flood Elevation (BFE) is the elevation of the 1% annual chance flood. These BFEs are most commonly rounded to the whole foot, as shown on the FIRM, but in certain circumstances or locations they may be rounded to 0.1 foot. Cross section lines shown on the FIRM may also be labeled with the BFE rounded to 0.1 foot. Whole-foot BFEs derived from engineering analyses that apply to coastal areas, areas of ponding, or other static areas with little elevation change may also be shown at selected intervals on the FIRM.

Cross sections with BFEs shown on the FIRM correspond to the cross sections shown in the Floodway Data table and Flood Profiles in this FIS Report. BFEs are primarily intended for flood insurance rating purposes. For construction and/or floodplain management purposes, users are cautioned to use the flood elevation data presented in this FIS Report in conjunction with the data shown on the FIRM.

2.4 Non-Encroachment Zones

This section is not applicable to this Flood Risk Project.

2.5 Coastal Flood Hazard Areas

This section is not applicable to this Flood Risk Project.

2.5.1 Water Elevations and the Effects of Waves

This section is not applicable to this Flood Risk Project.

Figure 5: Wave Runup Transect Schematic

[Not Applicable to this Flood Risk Project]

2.5.2 Floodplain Boundaries and BFEs for Coastal Areas

This section is not applicable to this Flood Risk Project.

2.5.3 Coastal High Hazard Areas

This section is not applicable to this Flood Risk Project.

Figure 6: Coastal Transect Schematic

[Not Applicable to this Flood Risk Project]

2.5.4 Limit of Moderate Wave Action

This section is not applicable to this Flood Risk Project.

SECTION 3.0 – INSURANCE APPLICATIONS

3.1 National Flood Insurance Program Insurance Zones

For flood insurance applications, the FIRM designates flood insurance rate zones as described in Figure 3, "Map Legend for FIRM." Flood insurance zone designations are assigned to flooding sources based on the results of the hydraulic or coastal analyses. Insurance agents use the zones shown on the FIRM and depths and base flood elevations in this FIS Report in conjunction with information on structures and their contents to assign premium rates for flood insurance policies.

The 1% annual chance floodplain boundary corresponds to the boundary of the areas of special flood hazards (e.g. Zones A, AE, V, VE, etc.), and the 0.2% annual chance floodplain boundary corresponds to the boundary of areas of additional flood hazards.

Table 3 lists the flood insurance zones in Gonzales County.

Table 3: Flood Zone Designations by Community

Community	Flood Zone(s)
Gonzales County, Unincorporated Areas	A, AE, X
Gonzales, City of	A, AE, X
Nixon, City of	A, X
Waelder, City of	A, AE, X

3.2 Coastal Barrier Resources System

This section is not applicable to this Flood Risk Project.

Table 4: Coastal Barrier Resources System Information

[Not Applicable to this Flood Risk Project]

SECTION 4.0 – AREA STUDIED

4.1 Basin Description

Table 5 contains a description of the characteristics of the HUC-8 sub-basins within which each community falls. The table includes the main flooding sources within each basin, a brief description of the basin, and its drainage area.

Table 5: Basin Characteristics

HUC-8 Sub-Basin Name	HUC-8 Sub-Basin Number	Primary Flooding Source	Description of Affected Area	Drainage Area (square miles)
Lavaca	12100101	Lavaca River	Begins at the upstream limit of the Lavaca River, extends southeast and ending at Lavaca Bay. The affected counties include the western half of Lavaca County and portions of Calhoun, DeWitt, Fayette, Gonzales, Jackson, and Victoria counties.	910
Middle Guadalupe	12100202	Guadalupe River	Begins at the upstream limit of the Guadalupe River, extends southeast, affecting one half of the eastern half of Caldwell County, as well as portions of Bastrop, Comal, DeWitt, Fayette, Gonzales, Guadalupe, Karnes and Wilson counties.	2138
San Marcos	12100203	Blanco River and San Marcos River	Begins at upstream limit of the Blanco River, extends southeast, affecting a majority of Caldwell County, as well as portions of Blanco, Comal, Gonzales, Guadalupe, Hays, Kendall and Travis counties.	1359

4.2 Principal Flood Problems

Table 6 contains a description of the principal flood problems that have been noted for Gonzales County by flooding source.

Table 6: Principal Flood Problems

Flooding Source	Description of Flood Problems
Guadalupe River	The Guadalupe River poses the greatest flood problem to residents of the unincorporated regions of Gonzales County. Commercial and residential areas are located on high ground above the floodplain. Floods produce some damage to property located on the southside of the city of Gonzales and the most severe flooding generally occurs in the uninhabited areas of the floodplain resulting in backwater conditions on tributary streams and localized flooding. Soils tend to range from shallow sandy loam overlying deeper deposits of blocky clays. Precipitation is well distributed throughout the year with the wettest periods occurring in the spring months and in September.
San Marcos River	The San Marcos River drains approximately 1300 square miles into a predominantly rural area of Gonzales County. Flooding problems associated with the San Marcos River occur within the City of Gonzales as discharges from the San Marcos River contribute significantly to flooding in Gonzales when combined with similarly high flows from the Guadalupe River.

Table 7 contains information about historic flood elevations in the communities within Gonzales County.

Table 7: Historic Flooding Elevations

Flooding Source	Location	Historic Peak (Feet NAVD88)	Event Date	Approximate Recurrence Interval (years)	Source of Data
Guadalupe River	Independence Park	275.8	2015	100	GBRA
San Marcos River	Palmetto State Park	322.0	2015	100	GBRA

4.3 Non-Levee Flood Protection Measures

Table 8 contains information about non-levee flood protection measures within Gonzales County such as dams, jetties, and or dikes. Levees are addressed in Section 4.4 of this FIS Report.

Table 8: Non-Levee Flood Protection Measures

Flooding Source	Structure Name	Type of Measure	Location	Description of Measure
Guadalupe River	H-4 Dam	Dam	Approximately 10 miles west of the City of Gonzales	The dam is an earthfill embankment with a steel and sheet-pile core wall of 5,100 feet long including powerhouse and gate-controlled concrete spillway
Guadalupe River	H-5 Dam	Dam	Approximately 3.5 miles southwest of the City of Gonzales, at Wood Lake	Hydroelectric dam
Guadalupe River	Municipal Dam	Dam	At the City of Gonzales city limit, adjacent to US-183	N/A

4.4 Levees

This section is not applicable to this Flood Risk Project.

Table 9: Levees

[Not Applicable to this Flood Risk Project]

SECTION 5.0 – ENGINEERING METHODS

For the flooding sources in the community, standard hydrologic and hydraulic study methods were used to determine the flood hazard data required for this study. Flood events of a magnitude that are expected to be equaled or exceeded at least once on the average during any 10-, 25-, 50-, 100-, or 500-year period (recurrence interval) have been selected as having special significance for floodplain management and for flood insurance rates. These events, commonly termed the 10-, 25-, 50-, 100-, and 500-year floods, have a 10-, 4-, 2-, 1-, and 0.2% annual chance, respectively, of being equaled or exceeded during any year.

Although the recurrence interval represents the long-term, average period between floods of a specific magnitude, rare floods could occur at short intervals or even within

the same year. The risk of experiencing a rare flood increases when periods greater than 1 year are considered. For example, the risk of having a flood that equals or exceeds the 100-year flood (1-percent chance of annual exceedance) during the term of a 30-year mortgage is approximately 26 percent (about 3 in 10); for any 90-year period, the risk increases to approximately 60 percent (6 in 10). The analyses reported herein reflect flooding potentials based on conditions existing in the community at the time of completion of this study. Maps and flood elevations will be amended periodically to reflect future changes.

In addition to these flood events, the "1-percent-plus", or "1%+", annual chance flood elevation has been modeled and included on the flood profile for certain flooding sources in this FIS Report. While not used for regulatory or insurance purposes, this flood event has been calculated to help illustrate the variability range that exists between the regulatory 1% annual chance flood elevation and a 1% annual chance elevation that has taken into account an additional amount of uncertainty in the flood discharges (thus, the 1% "plus"). For flooding sources whose discharges were estimated using regression equations, the 1%+ flood elevations are derived by taking the 1% annual chance flood discharges and increasing the modeled discharges by a percentage equal to the average predictive error for the regression equation. For flooding sources with gage- or rainfall-runoff-based discharge estimates, the upper 84-percent confidence limit of the discharges is used to compute the 1%+ flood elevations.

The engineering analyses described here incorporate the results of previously issued Letters of Map Change (LOMCs) listed in Table 27, "Incorporated Letters of Map Change", which include Letters of Map Revision (LOMRs). For more information about LOMRs, refer to Section 6.5, "FIRM Revisions."

5.1 Hydrologic Analyses

Hydrologic analyses were carried out to establish the peak elevation-frequency relationships for floods of the selected recurrence intervals for each flooding source studied. Hydrologic analyses are typically performed at the watershed level. Depending on factors such as watershed size and shape, land use and urbanization, and natural or man-made storage, various models or methodologies may be applied. A summary of the hydrologic methods applied to develop the discharges used in the hydraulic analyses for each stream is provided in Table 13. Greater detail (including assumptions, analysis, and results) is available in the archived project documentation.

A summary of the discharges is provided in Table 10. Frequency Discharge-Drainage Area Curves used to develop the hydrologic models may also be shown in Figure 7 for selected flooding sources. Stream gage information is provided in Table 12.

Table 10: Summary of Discharges

Flooding Source	Location	Drainage Area (Square Miles)	Peak Discharge (cfs)					
			10% Annual Chance	4% Annual Chance	2% Annual Chance	1% Annual Chance Existing	1% Annual Chance Future	0.2% Annual Chance
Baldridge Creek	At upstream corporate limit	4.31	3,020	*	4,485	5,195	*	6,950
Baldridge Creek	At downstream corporate limit	7.14	4,300	*	6,390	7,400	*	9,900
Guadalupe River	At H-5 Dam (Wood Lake)	750	29,000	*	65,000	86,000	*	154,000
Guadalupe River	At City of Gonzales	3,500	83,000	*	205,000	287,000	*	560,000
Kerr Creek	Below Confluence of Tributary	8.21	4,775	*	7,090	8,240	*	11,000
San Marcos River	At City of Luling Gage	838.9	47,410	*	103,870	142,430	*	253,130
San Marcos River	At confluence with Guadalupe River	1,360	56,720	*	128,000	178,190	*	304,640
San Marcos River	Just downstream of confluence with Plum Creek	1,250.7	65,850	*	139,060	189,210	*	371,600
Waelder Branch	At upstream corporate limit	0.26	420	*	610	695	*	900
Waelder Branch	At downstream corporate limit	1.12	1,170	*	1,700	1,925	*	2,500

*Not calculated for this Flood Risk Project

Figure 7: Frequency Discharge-Drainage Area Curves

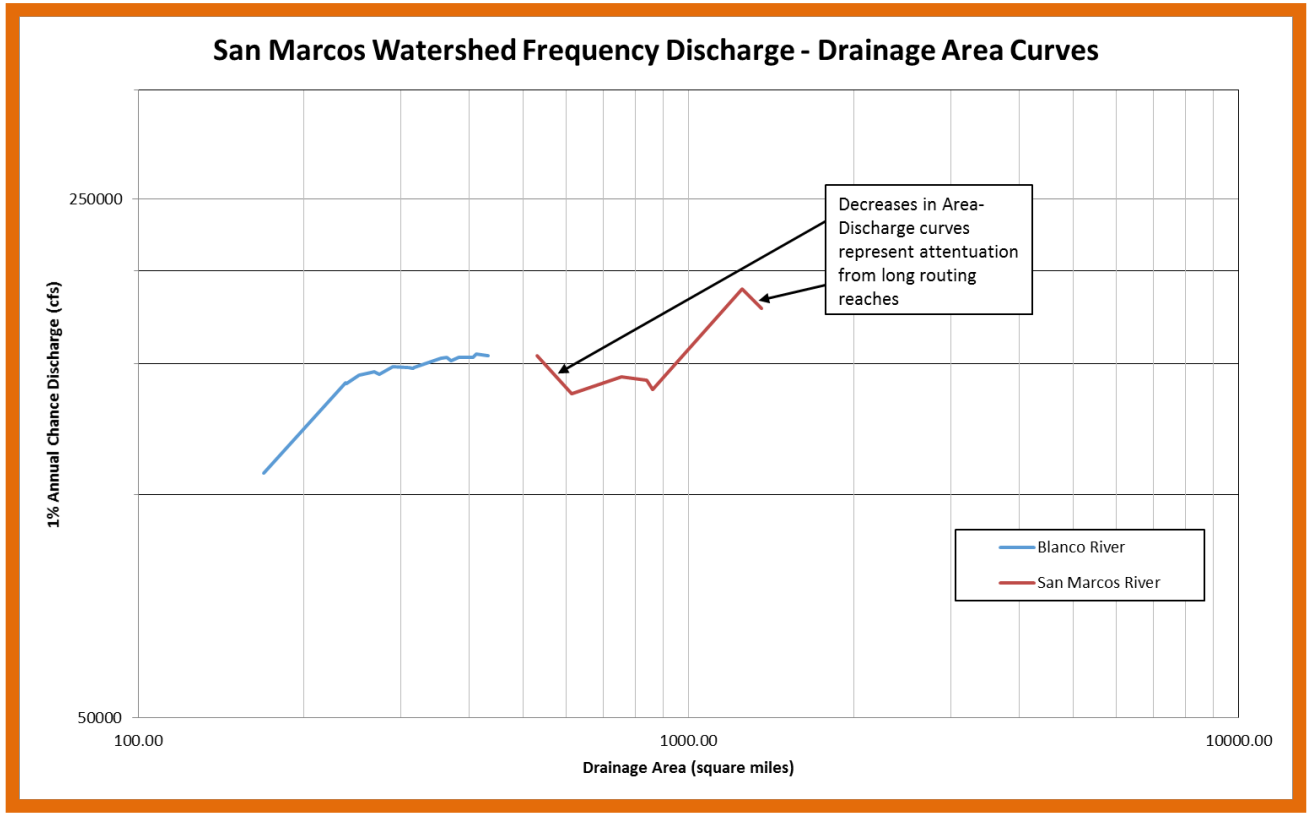


Table 11: Summary of Non-Coastal Stillwater Elevations

[Not Applicable to this Flood Risk Project]

Table 12: Stream Gage Information used to Determine Discharges

Flooding Source	Gage Identifier	Agency that Maintains Gage	Site Name	Drainage Area (Square Miles)	Period of Record	
					From	To
Peach Creek	08174600	USGS	Peach Creekk bl Dilworth, TX	460	08/01/1959	*
San Marcos River	08172000	USGS	City of Luling Gage at State Highway 80	838	04/18/1939	*

*Gage is currently active at time of FIS creation

5.2 Hydraulic Analyses

Analyses of the hydraulic characteristics of flooding from the sources studied were carried out to provide estimates of the elevations of floods of the selected recurrence intervals. Base flood elevations on the FIRM represent the elevations shown on the Flood Profiles and in the Floodway Data tables in the FIS Report. Rounded whole-foot elevations may be shown on the FIRM in coastal areas, areas of ponding, and other areas with static base flood elevations. These whole-foot elevations may not exactly reflect the elevations derived from the hydraulic analyses. Flood elevations shown on the FIRM are primarily intended for flood insurance rating purposes. For construction and/or floodplain management purposes, users are cautioned to use the flood elevation data presented in this FIS Report in conjunction with the data shown on the FIRM. The hydraulic analyses for this FIS were based on unobstructed flow. The flood elevations shown on the profiles are thus considered valid only if hydraulic structures remain unobstructed, operate properly, and do not fail.

For streams for which hydraulic analyses were based on cross sections, locations of selected cross sections are shown on the Flood Profiles (Exhibit 1). For stream segments for which a floodway was computed (Section 6.3), selected cross sections are also listed in Table 24, “Floodway Data.”

A summary of the methods used in hydraulic analyses performed for this project is provided in Table 13. Roughness coefficients are provided in Table 14. Roughness coefficients are values representing the frictional resistance water experiences when passing overland or through a channel. They are used in the calculations to determine water surface elevations. Greater detail (including assumptions, analysis, and results) is available in the archived project documentation.

Table 13: Summary of Hydrologic and Hydraulic Analyses

Flooding Source	Study Limits Downstream Limit	Study Limits Upstream Limit	Hydrologic Model or Method Used	Hydraulic Model or Method Used	Date Analyses Completed	Flood Zone on FIRM	Special Considerations
Baldridge Creek	Approximately 1.1 miles downstream of US Highway 97	Approximately 0.3 miles upstream of US Highway 90	Log-Probability Graph of Flood Discharges	HEC-2	December 1981	AE w/ Floodway	
Baldridge Creek and tributaries	At the confluence with Peach Creek	Approximately 3.2 miles upstream of US 90	Discharge versus drainage area curves (TWC 1963)	N/A	August 1978	A	
Bee Branch and tributaries	At the confluence with Sandy Fork	Approximately 2.5 miles upstream of County Road 459	Discharge versus drainage area curves (TWC 1963)	N/A	August 1978	A	
Big Fivemile Creek and tributaries	At the confluence with Peach Creek	Gonzales County boundary	Discharge versus drainage area curves (TWC 1963)	N/A	August 1978	A	
Buck Branch and tributaries	At the confluence with Sandy Fork	Gonzales County boundary	Discharge versus drainage area curves (TWC 1963)	N/A	August 1978	A	
Copperas Creek and tributaries	At the confluence with Peach Creek	Gonzales County boundary	Discharge versus drainage area curves (TWC 1963)	N/A	August 1978	A	
Denton Creek and tributaries	At the confluence with Peach Creek	At County Road 284	Discharge versus drainage area curves (TWC 1963)	N/A	August 1978	A	
Elm Creek and tributaries	At the confluence with Sandies Creek	Gonzales County boundary	Discharge versus drainage area curves (TWC 1963)	N/A	August 1978	A	

Table 13: Summary of Hydrologic and Hydraulic Analyses, continued

Flooding Source	Study Limits Downstream Limit	Study Limits Upstream Limit	Hydrologic Model or Method Used	Hydraulic Model or Method Used	Date Analyses Completed	Flood Zone on FIRM	Special Considerations
Fivemile Creek and tributaries	At the confluence with Sandies Creek	Approximately 0.5 miles upstream of County Road 137	Discharge versus drainage area curves (TWC 1963)	N/A	August 1978	A	
Guadalupe River	Approximately 1.0 miles downstream of US Highway 183	Approximately 1.9 miles upstream of US Highway 183	Log-Probability Graph of Flood Discharges	HEC-2	December 1981	AE w/ Floodway	Due to the meandering nature of the river in the vicinity of Gonzales, the water surface profiles do not in all cases parallel the stream bed. Profile elevations have been interpolated between cross sections assuming that flood discharges flow parallel to the flood boundaries. Because of this meandering, an artificial base line was used for stationing along this stream. This artificial base line is used both for stream profiles and for the base flood elevations shown on the Flood Insurance Rate Map.
Guadalupe River	At the Gonzales County boundary	At the downstream limit of the detailed study	Discharge versus drainage area curves (TWC 1963)	N/A	August 1978	A	
Guadalupe River	At the upstream limit of the detailed study	Gonzales County boundary	Discharge versus drainage area curves (TWC 1963)	N/A	August 1978	A	
Kerr Creek	Approximately 70 feet downstream of Saint Louis Street	Saint Lawrence Street	Log-Probability Graph of Flood Discharges	HEC-2	August 1978	AE w/ Floodway	
Peach Creek and tributaries	At the confluence with Guadalupe River	Gonzales County boundary	Discharge versus drainage area curves (TWC 1963)	N/A	August 1978	A	

Table 13: Summary of Hydrologic and Hydraulic Analyses, continued

Flooding Source	Study Limits Downstream Limit	Study Limits Upstream Limit	Hydrologic Model or Method Used	Hydraulic Model or Method Used	Date Analyses Completed	Flood Zone on FIRM	Special Considerations
Salty Creek and tributaries	At the confluence with Fivemile Creek	At the confluence with Sugar Creek	Discharge versus drainage area curves (TWC 1963)	N/A	August 1978	A	
Sandies Creek and tributaries	Gonzales County southern boundary	Gonzales County northern boundary	Discharge versus drainage area curves (TWC 1963)	N/A	August 1978	A	
Sandy Fork and tributaries	At the confluence with Peach Creek	Gonzales County boundary	Discharge versus drainage area curves (TWC 1963)	N/A	August 1978	A	
San Marcos River	Confluence with Guadalupe River	Approximately 1.2 Miles Upstream of Post Road and Approximately 0.4 Miles Upstream of Lime Kiln Road[1]	HEC-HMS 4.1	HEC-RAS 4.1	8/31/2016	AE w/ Floodway	
San Marcos River tributaries	Various limits	Various limits	Discharge versus drainage area curves (TWC 1963)	N/A	August 1978	A	
South Denton Creek	Gonzales County boundary	Approximately 0.8 miles upstream of County Road 289	Discharge versus drainage area curves (TWC 1963)	N/A	August 1978	A	
Sugar Creek and tributaries	At the confluence with Salty Creek	At State Highway 97	Discharge versus drainage area curves (TWC 1963)	N/A	August 1978	A	
Tinsley Creek	Approximately 850 feet downstream of Saint Vincent Street	Approximately 150 feet upstream of Sarah Dewitt Drive	Log-Probability Graph of Flood Discharges	HEC-2	August 1978	AE w/ Floodway	

Table 13: Summary of Hydrologic and Hydraulic Analyses, continued

Flooding Source	Study Limits Downstream Limit	Study Limits Upstream Limit	Hydrologic Model or Method Used	Hydraulic Model or Method Used	Date Analyses Completed	Flood Zone on FIRM	Special Considerations
Waelder Branch	Approximately 0.5 miles downstream of Ralph Bunch	Approximately 0.4 miles upstream of North Fifth Street	Log-Probability Graph of Flood Discharges	HEC-2	August 1978	AE w/ Floodway	
West Drain	At the confluence of Baldridge Creek	2,176 feet above the confluence of Baldridge Creek	Discharge versus drainage area curves (TWC 1963)	Chezy-Manning equation	June 1977	A	

Table 14: Roughness Coefficients

Flooding Source	Channel “n”	Overbank “n”
Baldridge Creek	0.040-0.070	0.070-0.090
Guadalupe River	0.050-0.070	0.070-0.090
Kerr Creek	0.040-0.090	0.070-0.090
San Marcos River	0.045-0.070	0.060-0.120
Tinsley Creek	0.040-0.090	0.070-0.090
Waelder Branch	0.020-0.070	0.070-0.090

5.3 Coastal Analyses

This section is not applicable to this Flood Risk Project.

Table 15: Summary of Coastal Analyses

[Not Applicable to this Flood Risk Project]

5.3.1 Total Stillwater Elevations

This section is not applicable to this Flood Risk Project.

Figure 8: 1% Annual Chance Total Stillwater Elevations for Coastal Areas

[Not Applicable to this Flood Risk Project]

Table 16: Tide Gage Analysis Specifics

[Not Applicable to this Flood Risk Project]

5.3.2 Waves

This section is not applicable to this Flood Risk Project.

5.3.3 Coastal Erosion

This section is not applicable to this Flood Risk Project.

5.3.4 Wave Hazard Analyses

This section is not applicable to this Flood Risk Project.

Table 17: Coastal Transect Parameters

[Not Applicable to this Flood Risk Project]

Figure 9: Transect Location Map

[Not applicable to this Flood Risk Project]

5.4 Alluvial Fan Analyses

This section is not applicable to this Flood Risk Project.

Table 18: Summary of Alluvial Fan Analyses

[Not Applicable to this Flood Risk Project]

Table 19: Results of Alluvial Fan Analyses

[Not Applicable to this Flood Risk Project]

SECTION 6.0 – MAPPING METHODS

6.1 Vertical and Horizontal Control

All FIS Reports and FIRMs are referenced to a specific vertical datum. The vertical datum provides a starting point against which flood, ground, and structure elevations can be referenced and compared. Until recently, the standard vertical datum used for newly created or revised FIS Reports and FIRMs was the National Geodetic Vertical Datum of 1929 (NGVD29). With the completion of the North American Vertical Datum of 1988 (NAVD88), many FIS Reports and FIRMs are now prepared using NAVD88 as the referenced vertical datum.

Flood elevations shown in this FIS Report and on the FIRMs are referenced to NAVD88. These flood elevations must be compared to structure and ground elevations referenced to the same vertical datum. For information regarding conversion between NGVD29 and NAVD88 or other datum conversion, visit the National Geodetic Survey website at www.ngs.noaa.gov, or contact the National Geodetic Survey (NGS) at the following address:

NGS Information Services
NOAA, N/NGS12
National Geodetic Survey
SSMC-3, #9202
1315 East-West Highway
Silver Spring, Maryland 20910-3282
(301) 713-3242

Temporary vertical monuments are often established during the preparation of a flood hazard analysis for the purpose of establishing local vertical control. Although these monuments are not shown on the FIRM, they may be found in the archived project documentation associated with the FIS Report and the FIRMs for this community. Interested individuals may contact FEMA to access these data.

To obtain current elevation, description, and/or location information for benchmarks in the area, please contact the Information Services Branch of the NGS at (301) 713-3242, or visit their website at www.ngs.noaa.gov.

The countywide conversion factor of 0.14 feet was calculated for Gonzales County.

Table 20: Countywide Vertical Datum Conversion

[Not Applicable to this Flood Risk Project]

Table 21: Stream-Based Vertical Datum Conversion

[Not Applicable to this Flood Risk Project]

6.2 Base Map

The FIRMs and FIS Report for this project have been produced in a digital format. The flood hazard information was converted to a Geographic Information System (GIS) format that meets FEMA's FIRM Database specifications and geographic information standards. This information is provided in a digital format so that it can be incorporated into a local GIS and be accessed more easily by the community. The FIRM Database includes most of the tabular information contained in the FIS Report in such a way that the data can be associated with pertinent spatial features. For example, the information contained in the Floodway Data table and Flood Profiles can be linked to the cross sections that are shown on the FIRMs. Additional information about the FIRM Database and its contents can be found in FEMA's *Guidelines and Standards for Flood Risk Analysis and Mapping*, www.fema.gov/guidelines-and-standards-flood-risk-analysis-and-mapping.

Base map information shown on the FIRM was derived from the sources described in Table 22.

Table 22: Base Map Sources

Data Type	Data Provider	Data Date	Data Scale	Data Description
Political boundaries	Texas Natural Resources Information System	2015	1:5,000	Municipal and county boundaries
Transportation Features	U.S. Department of Commerce	2015	*	Tiger/line shapefile

*Data not available

6.3 Floodplain and Floodway Delineation

The FIRM shows tints, screens, and symbols to indicate floodplains and floodways as well as the locations of selected cross sections used in the hydraulic analyses and floodway computations.

For riverine flooding sources, the mapped floodplain boundaries shown on the FIRM have been delineated using the flood elevations determined at each cross section; between cross sections, the boundaries were interpolated using the topographic elevation data described in Table 23.

In cases where the 1% and 0.2% annual chance floodplain boundaries are close together, only the 1% annual chance floodplain boundary has been shown. Small areas within the floodplain boundaries may lie above the flood elevations but cannot be shown due to limitations of the map scale and/or lack of detailed topographic data.

The floodway widths presented in this FIS Report and on the FIRM were computed for certain stream segments on the basis of equal conveyance reduction from each side of the floodplain. Floodway widths were computed at cross sections. Between cross sections, the floodway boundaries were interpolated. Table 2 indicates the flooding sources for which floodways have been determined. The results of the floodway computations for those flooding sources have been tabulated for selected cross sections and are shown in Table 24, “Floodway Data.”

Table 23: Summary of Topographic Elevation Data used in Mapping

Community	Flooding Source	Source for Topographic Elevation Data					
		Description	Scale	Contour Interval	$RMSE_z$	$Accuracy_z$	Citation
Gonzales County Unincorporated Areas; Gonzales, City of	San Marcos River	LiDAR	N/A	N/A	18.59 cm	170 cm	COA 2003
Gonzales County; Gonzales, City of; Waelder, City of	All within HUC 12100202	Topographic maps	1:24,000	10 ft	N/A	N/A	USGS 1959-1973

BFEs shown at cross sections on the FIRM represent the 1% annual chance water surface elevations shown on the Flood Profiles and in the Floodway Data tables in the FIS Report.

Table 24: Floodway Data

LOCATION		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/SEC)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
A	2.39	270	1,099	5.9	349.9	349.9	350.9	1.0
B	2.91	505	2,621	2.5	356.4	356.4	357.1	0.7
C	3.41	205	1,254	5.2	360.3	360.3	360.9	0.6
D	3.83	260	1,708	3.4	363.8	363.8	364.6	0.8
E	4.05	206	1,278	4.1	365.4	365.4	366.2	0.8

[1]Stream distance in miles above confluence of Boggy Creek

TABLE 24

FEDERAL EMERGENCY MANAGEMENT AGENCY

GONZALES COUNTY, TEXAS

AND INCORPORATED AREAS

FLOODWAY DATA

FLOODING SOURCE: BALDRIDGE CREEK

LOCATION		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION	DISTANCE	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/SEC)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
A	0.92[1]	11,814	117,533	2.4	281.7	281.7	282.6	0.9
B	1.06[1]	12,392	119,110	2.4	282.6	282.6	283.5	0.9
C	2.04[2]	4,940	29,320	2.9	304.3	304.3	305.2	0.9
D	3.78[2]	4,050	37,210	2.3	314.7	314.7	315.6	0.9
E	6.40[2]	1,590	18,500	4.6	329.3	329.3	329.7	0.4
F	8.86[2]	3,625	39,130	2.2	340.4	340.4	340.5	0.1
G	11.44[2]	5,060	62,660	1.4	351.7	351.7	352.5	0.8
H	14.15[2]	1,450	25,600	3.4	356.9	356.9	357.6	0.7

[1]Stream distance in miles along profile base line above Limit of Detailed Study (Approximately 0.75 miles downstream of Tinsley Creek)
[2]Stream distance in miles along profile base line above H-5 Dam

TABLE 24

FEDERAL EMERGENCY MANAGEMENT AGENCY

GONZALES COUNTY, TEXAS

AND INCORPORATED AREAS

FLOODWAY DATA

FLOODING SOURCE: GUADALUPE RIVER

LOCATION		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/SEC)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
A	2.72	140	1,376	5.8	278.0	278.0	278.1	0.1
B	2.78	140	1,240	6.5	279.0	279.0	279.3	0.3

[1]Stream distance in miles above confluence with Guadalupe River

TABLE 24

FEDERAL EMERGENCY MANAGEMENT AGENCY

GONZALES COUNTY, TEXAS

AND INCORPORATED AREAS

FLOODWAY DATA

FLOODING SOURCE: KERR CREEK

LOCATION		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/SEC)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
A	5,012	6,290	76,719	2.3	287.4	287.4	288.4	1.0
B	12,235	5,024	61,001	2.9	291.2	291.2	291.9	0.7
C	24,131	4,334	66,324	2.7	296.6	296.6	297.0	0.4
D	31,826	5,407	69,270	2.6	298.4	298.4	299.2	0.8
E	40,377	4,939	72,156	2.5	304.6	304.6	305.5	0.9
F	63,437	2,655	35,751	5.3	311.4	311.4	312.2	0.8
G	72,113	3,093	45,569	4.2	316.8	316.8	317.6	0.8
H	78,630	6,157	91,263	2.1	318.5	318.5	319.5	1.0
I	87,528	6,048	81,477	2.4	319.2	319.2	320.2	1.0
J	99,652	6,229	72,914	2.6	321.3	321.3	322.2	0.9
K	117,116	3,340	50,311	3.8	331.5	331.5	332.1	0.6
L	127,510	5,118	76,378	2.5	334.7	334.7	335.4	0.7
M	133,045	4,248	61,200	3.1	336.0	336.0	336.7	0.7
N	145,539	4,152 / 3,961[2]	51,599	1.6	344.7	344.7	345.2	0.5
O	151,877	2,284 / 100[2]	27,379	3.0	345.7	345.7	346.1	0.4
P	156,972	2,522 / 2413[2]	31,620	2.6	347.6	347.6	347.9	0.3
Q	168,643	4,283 / 299[2]	40,014	2.4	350.8	350.8	351.4	0.6

[1] Stream distance in feet above confluence with Guadalupe River
[2] Total floodway width / width within Guadalupe County

TABLE 24

FEDERAL EMERGENCY MANAGEMENT AGENCY

GONZALES COUNTY, TEXAS

AND INCORPORATED AREAS

FLOODWAY DATA

FLOODING SOURCE: SAN MARCOS RIVER

LOCATION		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/SEC)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
A	1.11	537	1,712	2.1	279.6	277.9[2]	278.4	0.5
B	1.33	250	871	3.8	281.1	281.1	281.5	0.4
C	1.49	340	1,119	2.6	282.9	282.9	283.8	0.9
D	1.78	260	877	3.4	287.9	287.9	288.3	0.4

[1]Stream distance in miles above confluence with Guadalupe River
[2]Computed without consideration of backwater effects from Guadalupe River

TABLE 24

FEDERAL EMERGENCY MANAGEMENT AGENCY

GONZALES COUNTY, TEXAS

AND INCORPORATED AREAS

FLOODWAY DATA

FLOODING SOURCE: TINSLEY CREEK

LOCATION		FLOODWAY			1% ANNUAL CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/SEC)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
A	1.50	90	285	3.8	348.3	348.3	349.1	0.8
B	1.71	105	386	2.8	352.1	352.1	353.0	0.9
C	1.92	100	195	5.6	359.9	359.9	360.6	0.7
D	2.10	365	1,089	0.8	369.4	369.4	369.4	0.0
E	2.22	105	315	2.9	370.1	370.1	370.6	0.5
F	2.47	100	261	3.5	378.1	378.1	378.9	0.8

[1]Stream distance in miles above confluence with Baldridge Creek

TABLE 24

FEDERAL EMERGENCY MANAGEMENT AGENCY

GONZALES COUNTY, TEXAS

AND INCORPORATED AREAS

FLOODWAY DATA

FLOODING SOURCE: WAELDER BRANCH

Table 25: Flood Hazard and Non-Encroachment Data for Selected Streams

[Not Applicable to this Flood Risk Project]

6.4 Coastal Flood Hazard Mapping

This section is not applicable to this Flood Risk Project.

Table 26: Summary of Coastal Transect Mapping Considerations

[Not Applicable to this Flood Risk Project]

6.5 FIRM Revisions

This FIS Report and the FIRM are based on the most up-to-date information available to FEMA at the time of its publication; however, flood hazard conditions change over time. Communities or private parties may request flood map revisions at any time. Certain types of requests require submission of supporting data. FEMA may also initiate a revision. Revisions may take several forms, including Letters of Map Amendment (LOMAs), Letters of Map Revision Based on Fill (LOMR-Fs), Letters of Map Revision (LOMRs) (referred to collectively as Letters of Map Change (LOMCs)), Physical Map Revisions (PMRs), and FEMA-contracted restudies. These types of revisions are further described below. Some of these types of revisions do not result in the republishing of the FIS Report. To assure that any user is aware of all revisions, it is advisable to contact the community repository of flood-hazard data (shown in Table 31, “Map Repositories”).

6.5.1 Letters of Map Amendment

A LOMA is an official revision by letter to an effective NFIP map. A LOMA results from an administrative process that involves the review of scientific or technical data submitted by the owner or lessee of property who believes the property has incorrectly been included in a designated SFHA. A LOMA amends the currently effective FEMA map and establishes that a specific property is not located in a SFHA.

To obtain an application for a LOMA, visit www.fema.gov/floodplain-management/letter-map-amendment-loma and download the form “MT-1 Application Forms and Instructions for Conditional and Final Letters of Map Amendment and Letters of Map Revision Based on Fill”. Visit the “Flood Map-Related Fees” section to determine the cost, if any, of applying for a LOMA.

FEMA offers a tutorial on how to apply for a LOMA. The LOMA Tutorial Series can be accessed at www.fema.gov/online-tutorials.

For more information about how to apply for a LOMA, call the FEMA Map Information eXchange; toll free, at 1-877-FEMA MAP (1-877-336-2627).

6.5.2 Letters of Map Revision Based on Fill

A LOMR-F is an official revision by letter to an effective NFIP map. A LOMR-F states FEMA's determination concerning whether a structure or parcel has been elevated on fill above the base flood elevation and is, therefore, excluded from the SFHA.

Information about obtaining an application for a LOMR-F can be obtained in the same manner as that for a LOMA, by visiting www.fema.gov/floodplain-management/letter-map-amendment-loma for the "MT-1 Application Forms and Instructions for Conditional and Final Letters of Map Amendment and Letters of Map Revision Based on Fill" or by calling the FEMA Map Information eXchange, toll free, at 1-877-FEMA MAP (1-877-336-2627). Fees for applying for a LOMR-F, if any, are listed in the "Flood Map-Related Fees" section.

A tutorial for LOMR-F is available at www.fema.gov/online-tutorials.

6.5.3 Letters of Map Revision

A LOMR is an official revision to the currently effective FEMA map. It is used to change flood zones, floodplain and floodway delineations, flood elevations and planimetric features. All requests for LOMRs should be made to FEMA through the chief executive officer of the community, since it is the community that must adopt any changes and revisions to the map. If the request for a LOMR is not submitted through the chief executive officer of the community, evidence must be submitted that the community has been notified of the request.

To obtain an application for a LOMR, visit www.fema.gov/national-flood-insurance-program-flood-hazard-mapping/mt-2-application-forms-and-instructions and download the form "MT-2 Application Forms and Instructions for Conditional Letters of Map Revision and Letters of Map Revision". Visit the "Flood Map-Related Fees" section to determine the cost of applying for a LOMR. For more information about how to apply for a LOMR, call the FEMA Map Information eXchange; toll free, at 1-877-FEMA MAP (1-877-336-2627) to speak to a Map Specialist.

Previously issued mappable LOMCs (including LOMRs) that have been incorporated into the Gonzales County FIRM are listed in Table 27.

Table 27: Incorporated Letters of Map Change

Case Number	Effective Date	Flooding Source	FIRM Panel(s)
14-06-1672P	03/25/2015	Tinsley Creek	48177C0240D

6.5.4 Physical Map Revisions

A Physical Map Revisions (PMR) is an official republication of a community's NFIP map to effect changes to base flood elevations, floodplain boundary delineations, regulatory floodways and planimetric features. These changes typically occur as a result of structural works or improvements, annexations resulting in additional flood hazard areas or correction to base flood elevations or SFHAs.

The community's chief executive officer must submit scientific and technical data to FEMA to support the request for a PMR. The data will be analyzed and the map will be revised if warranted. The community is provided with copies of the revised information and is afforded a review period. When the base flood elevations are changed, a 90-day appeal period is provided. A 6-month adoption period for formal approval of the revised map(s) is also provided.

For more information about the PMR process, please visit www.fema.gov and visit the "Flood Map Revision Processes" section.

6.5.5 Contracted Restudies

The NFIP provides for a periodic review and restudy of flood hazards within a given community. FEMA accomplishes this through a national watershed-based mapping needs assessment strategy, known as the Coordinated Needs Management Strategy (CNMS). The CNMS is used by FEMA to assign priorities and allocate funding for new flood hazard analyses used to update the FIS Report and FIRM. The goal of CNMS is to define the validity of the engineering study data within a mapped inventory. The CNMS is used to track the assessment process, document engineering gaps and their resolution, and aid in prioritization for using flood risk as a key factor for areas identified for flood map updates. Visit www.fema.gov to learn more about the CNMS or contact the FEMA Regional Office listed in Section 8 of this FIS Report.

6.5.6 Community Map History

The current FIRM presents flooding information for the entire geographic area of Gonzales County. Previously, separate FIRMs, Flood Hazard Boundary Maps (FHBMs) and/or Flood Boundary and Floodway Maps (FBFMs) may have been prepared for the incorporated communities and the unincorporated areas in the county that had identified SFHAs. Current and historical data relating to the maps prepared for the project area are presented in Table 28, "Community Map History." A description of each of the column headings and the source of the date is also listed below.

- *Community Name* includes communities falling within the geographic area shown on the FIRM, including those that fall on the boundary line, nonparticipating communities, and communities with maps that have been rescinded. Communities with No Special Flood Hazards are indicated by a footnote. If all maps (FHBM, FBFM, and FIRM) were rescinded for a community, it is not listed in this table unless SFHAs have been identified in this community.

- *Initial Identification Date (First NFIP Map Published)* is the date of the first NFIP map that identified flood hazards in the community. If the FHBM has been converted to a FIRM, the initial FHBM date is shown. If the community has never been mapped, the upcoming effective date or "pending" (for Preliminary FIS Reports) is shown. If the community is listed in Table 28 but not identified on the map, the community is treated as if it were unmapped.

- *Initial FHBM Effective Date* is the effective date of the first FHBM. This date may be the same date as the Initial NFIP Map Date.

- *FHBM Revision Date(s)* is the date(s) that the FHBM was revised, if applicable.

- *Initial FIRM Effective Date* is the date of the first effective FIRM for the community.

- *FIRM Revision Date(s)* is the date(s) the FIRM was revised, if applicable. This is the revised date that is shown on the FIRM panel, if applicable. As countywide studies are completed or revised, each community listed should have its FIRM dates updated accordingly to reflect the date of the countywide study. Once the FIRMs exist in countywide format, as PMRs of FIRM panels within the county are completed, the FIRM Revision Dates in the table for each community affected by the PMR are updated with the date of the PMR, even if the PMR did not revise all the panels within that community.

The initial effective date for the Gonzales County FIRMs in countywide format was 12/3/2010.

Table 28: Community Map History

Community Name	Initial Identification Date	Initial FHBM Effective Date	FHBM Revision Date(s)	Initial FIRM Effective Date	FIRM Revision Date(s)
Gonzales County, Unincorporated Areas	03/08/1974	03/08/1974	N/A	08/15/1978	TBD 12/03/2010 11/20/1998
Gonzales, City of	05/24/1974	04/30/1976	N/A	06/15/1979	TBD 12/03/2010
Nixon, City of	06/27/1975	06/27/1975	N/A	11/26/2010[2]	12/03/2010
Smiley, City of[1]	12/03/2010	N/A	N/A	12/03/2010	N/A
Waelder, City of	07/19/1974	04/02/1976	N/A	12/01/1977	12/03/2010

[1] No Special Flood Hazard Areas Identified
[2] Date is taken from Wilson County Initial FIRM date

SECTION 7.0 – CONTRACTED STUDIES AND COMMUNITY COORDINATION

7.1 Contracted Studies

Table 29 provides a summary of the contracted studies, by flooding source, that are included in this FIS Report.

Table 29: Summary of Contracted Studies Included in this FIS Report

Flooding Source	FIS Report Dated	Contractor	Number	Work Completed Date	Affected Communities
Baldridge Creek	11/20/1998	Black and Veatch, Consulting Engineers	H-3831	December 1981	Gonzales County Unincorporated Areas
Baldridge Creek and tributaries	11/20/1998	Black and Veatch, Consulting Engineers	H-3831	December 1981	Gonzales County Unincorporated Areas
Bee Branch and tributaries	11/20/1998	Black and Veatch, Consulting Engineers	H-3831	December 1981	Gonzales County Unincorporated Areas
Big Fivemile Creek and tributaries	11/20/1998	Black and Veatch, Consulting Engineers	H-3831	December 1981	Gonzales County Unincorporated Areas
Buck Branch and tributaries	11/20/1998	Black and Veatch, Consulting Engineers	H-3831	December 1981	Gonzales County Unincorporated Areas
Copperas Creek and tributaries	11/20/1998	Black and Veatch, Consulting Engineers	H-3831	December 1981	Gonzales County Unincorporated Areas
Denton Creek and tributaries	11/20/1998	Black and Veatch, Consulting Engineers	H-3831	December 1981	Gonzales County Unincorporated Areas
Elm Creek and tributaries	11/20/1998	Black and Veatch, Consulting Engineers	H-3831	December 1981	Gonzales County Unincorporated Areas

Table 29: Summary of Contracted Studies Included in this FIS Report, continued

Flooding Source	FIS Report Dated	Contractor	Number	Work Completed Date	Affected Communities
Fivemile Creek and tributaries	11/20/1998	Black and Veatch, Consulting Engineers	H-3831	December 1981	Gonzales County Unincorporated Areas
Guadalupe River	11/20/1998	Black and Veatch, Consulting Engineers	H-3831	December 1981	Gonzales County Unincorporated Areas; Gonzales, City of
Guadalupe River and tributaries	11/20/1998	Black and Veatch, Consulting Engineers	H-3831	December 1981	Gonzales County Unincorporated Areas
Guadalupe River and tributaries	11/20/1998	Black and Veatch, Consulting Engineers	H-3831	December 1981	Gonzales County Unincorporated Areas
Kerr Creek	12/15/1978	Black and Veatch, Consulting Engineers	H-3814, Modification No. 5	December 1976	Gonzales, City of
Peach Creek and tributaries	11/20/1998	Black and Veatch, Consulting Engineers	H-3831	December 1981	Gonzales County Unincorporated Areas
Salty Creek and tributaries	11/20/1998	Black and Veatch, Consulting Engineers	H-3831	December 1981	Gonzales County Unincorporated Areas
Sandies Creek and tributaries	11/20/1998	Black and Veatch, Consulting Engineers	H-3831	December 1981	Gonzales County Unincorporated Areas
San Marcos River	TBD	Compass JV	HSFE06-15-J-0002	10/31/2016	Gonzales County, Unincorporated Areas; Gonzales, City of
San Marcos River tributaries	11/20/1998	Black and Veatch, Consulting Engineers	H-3831	December 1981	Gonzales County Unincorporated Areas

Table 29: Summary of Contracted Studies Included in this FIS Report, continued

Flooding Source	FIS Report Dated	Contractor	Number	Work Completed Date	Affected Communities
South Denton Creek	11/20/1998	Black and Veatch, Consulting Engineers	H-3831	December 1981	Gonzales County Unincorporated Areas
Sugar Creek and tributaries	11/20/1998	Black and Veatch, Consulting Engineers	H-3831	December 1981	Gonzales County Unincorporated Areas
Tinsley Creek	12/15/1978	Black and Veatch, Consulting Engineers	H-3814, Modification No. 5	December 1976	Gonzales, City of
Waelder Branch	06/01/1977	Black and Veatch, Consulting Engineers	H-3814, Modification No. 5	October 1976	Waelder, City of
West Drain	11/20/1998	Black and Veatch, Consulting Engineers	H-3814, Modification No. 5	October 1976	Waelder, City of

7.2 Community Meetings

The dates of the community meetings held for this Flood Risk Project and previous Flood Risk Projects are shown in Table 30. These meetings may have previously been referred to by a variety of names (Community Coordination Officer (CCO), Scoping, Discovery, etc.), but all meetings represent opportunities for FEMA, community officials, study contractors, and other invited guests to discuss the planning for and results of the project.

Table 30: Community Meetings

Community	FIS Report Dated	Date of Meeting	Meeting Type	Attended By
Gonzales County, Unincorporated Areas	TBD			
Gonzales, City of	TBD			
Nixon, City of	12/03/2010	05/12/2008	Initial CCO	FEMA, Halff Associates, Inc, Gonzales, City of, Golden Crescent Regional Planning Commission, Guadalupe Brazos River Authority, and Gonzales County
		05/20/2009	Final CCO	FEMA, Halff Associates, Gonzales, City of, Waelder, City of, Gonzales County and Texas Water Development Board
Smiley, City of	12/03/2010	05/12/2008	Initial CCO	FEMA, Halff Associates, Inc, Gonzales, City of, Golden Crescent Regional Planning Commission, Guadalupe Brazos River Authority, and Gonzales County
		05/20/2009	Final CCO	FEMA, Halff Associates, Gonzales, City of, Waelder, City of, Gonzales County and Texas Water Development Board
Waelder, City of	12/03/2010	05/12/2008	Initial CCO	FEMA, Halff Associates, Inc, Gonzales, City of, Golden Crescent Regional Planning Commission, Guadalupe Brazos River Authority, and Gonzales County
		05/20/2009	Final CCO	FEMA, Halff Associates, Gonzales, City of, Waelder, City of, Gonzales County and Texas Water Development Board

SECTION 8.0 – ADDITIONAL INFORMATION

Information concerning the pertinent data used in the preparation of this FIS Report can be obtained by submitting an order with any required payment to the FEMA Engineering Library. For more information on this process, see www.fema.gov.

The additional data that was used for this project includes the FIS Report and FIRM that were previously prepared for Gonzales County (FEMA 2010).

Table 31 is a list of the locations where FIRMs for Gonzales County can be viewed. Please note that the maps at these locations are for reference only and are not for distribution. Also, please note that only the maps for the community listed in the table are available at that particular repository. A user may need to visit another repository to view maps from an adjacent community.

Table 31: Map Repositories

Community	Address	City	State	Zip Code
Gonzales County, Unincorporated Areas	County Courthouse 414 St. Joseph Street	Gonzales	TX	78629
Gonzales, City of	City Hall 820 St. Joseph Street	Gonzales	TX	78629
Nixon, City of	City Hall 100 West 3rd Street	Nixon	TX	78140
Smiley, City of[1]	City Hall 207 West U.S. Highway 87	Smiley	TX	78159
Waelder, City of	City Hall 300 Highway 90 West	Waelder	TX	78959

[1] No Special Flood Hazard Areas Identified

The National Flood Hazard Layer (NFHL) dataset is a compilation of effective FIRM Databases and LOMCs. Together they create a GIS data layer for a State or Territory. The NFHL is updated as studies become effective and extracts are made available to the public monthly. NFHL data can be viewed or ordered from the website shown in Table 32.

Table 32 contains useful contact information regarding the FIS Report, the FIRM, and other relevant flood hazard and GIS data. In addition, information about the State NFIP Coordinator and GIS Coordinator is shown in this table. At the request of FEMA, each Governor has designated an agency of State or territorial government to coordinate that State's or territory's NFIP activities. These agencies often assist communities in developing and adopting necessary floodplain management measures. State GIS Coordinators are knowledgeable about the availability and location of State and local GIS data in their state.

Table 32: Additional Information

FEMA and the NFIP	
FEMA and FEMA Engineering Library website	www.fema.gov/national-flood-insurance-program-flood-hazard-mapping/engineering-library
NFIP website	www.fema.gov/national-flood-insurance-program
NFHL Dataset	msc.fema.gov
FEMA Region VI	Federal Emergency Management Agency FRC 800 North Loop 288 Denton, TX 76209-3698 (940) 898-5399
Other Federal Agencies	
USGS website	www.usgs.gov
Hydraulic Engineering Center website	www.hec.usace.army.mil
State Agencies and Organizations	
State NFIP Coordinator	Michael Segner, CFM Texas Water Development Board 1700 North Congress Avenue P.O. Box 13231 Austin, TX 78711-3231 (512) 463-3509 x111 michael.segner@twdb.texas.gov
State GIS Coordinator	Mike Ouimet State GIS Coordinator 300 West 15th Street P.O. Box 13564 Austin, TX 78711-3564 Phone: (512) 305-9076 Fax: (512) 475-4759 mike.ouimet@dir.state.tx.us

SECTION 9.0 – BIBLIOGRAPHY AND REFERENCES

Table 33 includes sources used in the preparation of and cited in this FIS Report as well as additional studies that have been conducted in the study area.

Table 33: Bibliography and References

Citation in this FIS	Publisher/ Issuer	*Publication Title,* "Article," Volume, Number, etc.	Author/Editor	Place of Publication	Publication Date/ Date of Issuance	Link
FEMA, 1976	Federal Emergency Management Agency	*Flood Hazard Boundary Map, Waelder, Texas*		Washington, D.C.	April 1976	FEMA Flood Map Service Center msc.fema.gov
FEMA, 1977	Federal Emergency Management Agency	*Flood Insurance Study, City of Waelder, Gonzales County, Texas*		Washington, D.C.	June 1977	FEMA Flood Map Service Center msc.fema.gov
FEMA, 1977	Federal Emergency Management Agency	*Flood Boundary Map By Approximate Methods, Maps 3 and 4 of 27*		Washington, D.C.	March 1977	FEMA Flood Map Service Center msc.fema.gov
FEMA, 1978	Federal Emergency Management Agency	*Flood Insurance Study, City of Gonzales, Gonzales County, Texas*		Washington, D.C.	December 1978	FEMA Flood Map Service Center msc.fema.gov
FEMA, 1986	Federal Emergency Management Agency	*Flood Insurance Study, Caldwell County, Texas*		Washington, D.C.	March 1986	FEMA Flood Map Service Center msc.fema.gov
FEMA, 1998	Federal Emergency Management Agency	*Flood Insurance Study, Gonzales County, Texas*		Washington, D.C.	November 20, 1998	FEMA Flood Map Service Center msc.fema.gov
Interagency Advisory Committee, 1981	Interagency Advisory Committee on Water Data, Hydrology Subcommittee	*Bulletin No. 17B, Guidelines for Determining Flood Flow Frequency*		Washington, D.C.	September 1981	

Table 33: Bibliography and References

Citation in this FIS	Publisher/ Issuer	*Publication Title,* "Article," Volume, Number, etc.	Author/Editor	Place of Publication	Publication Date/ Date of Issuance	Link
TWC 1963	Texas Water Commission	*Floods in Texas, Magnitude and Frequency of Peak Flows*		Austin, TX	1963	
TWDB 2016	Texas Water Development Board	*Lake Gonzales (Guadalupe River Basin)*		Austin, TX	2016	https://www.twdb.texas.gov/surfacewater/rivers/reservoirs/gonzales/index.asp
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USACE, 1970	United States Army Corps of Engineers	*Synthetic Unit Hydrograph Relationships, Trinity River Tributaries, Fort Worth-Dallas Urban Area*	Thomas Nelson	Davis, CA	September 1970	
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USACE, 1976-B	United States Army Corps of Engineers	*Discharge Frequency, Guadalupe River Basin – Guadalupe River at Gonzales*		Fort Worth, TX	September 27, 1976	www.usace.army.mil
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Table 33: Bibliography and References

Citation in this FIS	Publisher/ Issuer	*Publication Title,* "Article," Volume, Number, etc.	Author/Editor	Place of Publication	Publication Date/ Date of Issuance	Link
USACE, 1986	United States Army Corps of Engineers	*NUDALLAS Documentation and Suppporting Appendices*		Davis, CA	September 1986	
USACE, 1991	United States Army Corps of Engineers	*HEC-2 Water Surface Profiles, Generalized comuter Program*		Davis, CA	September 1991	
USACE, 1992	United States Army Corps of Engineers	*HEC-FFA Flood Frequency Analysis Computer Program, Version 3.1*		Davis, CA	May 1992	
USACE, 1997	United States Army Corps of Engineers	*Uncertainty Estimates for Nonanalytic Frequency Curves, ETL 1110-2-537*		Davis, CA	October 1997	
USACE, 2010	United States Army Corps of Engineers, Hydrologic Engineering Center	*HEC-RAS River Analysis System v4.1*		Davis, CA	January 2010	
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Table 33: Bibliography and References

Citation in this FIS	Publisher/ Issuer	*Publication Title,* "Article," Volume, Number, etc.	Author/Editor	Place of Publication	Publication Date/ Date of Issuance	Link
USACE, 2016	United States Army Corps of Engineers	*Interagency Flood Risk Management (InFRM) Hydrology Report for the San Marcos River Basin*		Davis, CA	September 2016	
USDI, 1973	U.S. Department of the Interior, Bureau of Reclamation	*Design of Small Dams, Second Edition*		Washington, D.C.	1973	
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USGS, 1986	United States Depart of the Interior, Geologic Survey	*Guidelines for Determining Flood Flow Frequency, Bulletin 17B of the Hydrology Subcommittee*		Washington, D.C.	September 1981	
USGS, 2004	United States Depart of the Interior, Geologic Survey	*Atlas of Depth-Duration Frequency of Precipitation Annual Maxima for Texas SIR 2004-5041*	William Asquith and Meghan Roussel	Washington, D.C.	2004	

Table 33: Bibliography and References

Citation in this FIS	Publisher/ Issuer	*Publication Title,* "Article," Volume, Number, etc.	Author/Editor	Place of Publication	Publication Date/ Date of Issuance	Link
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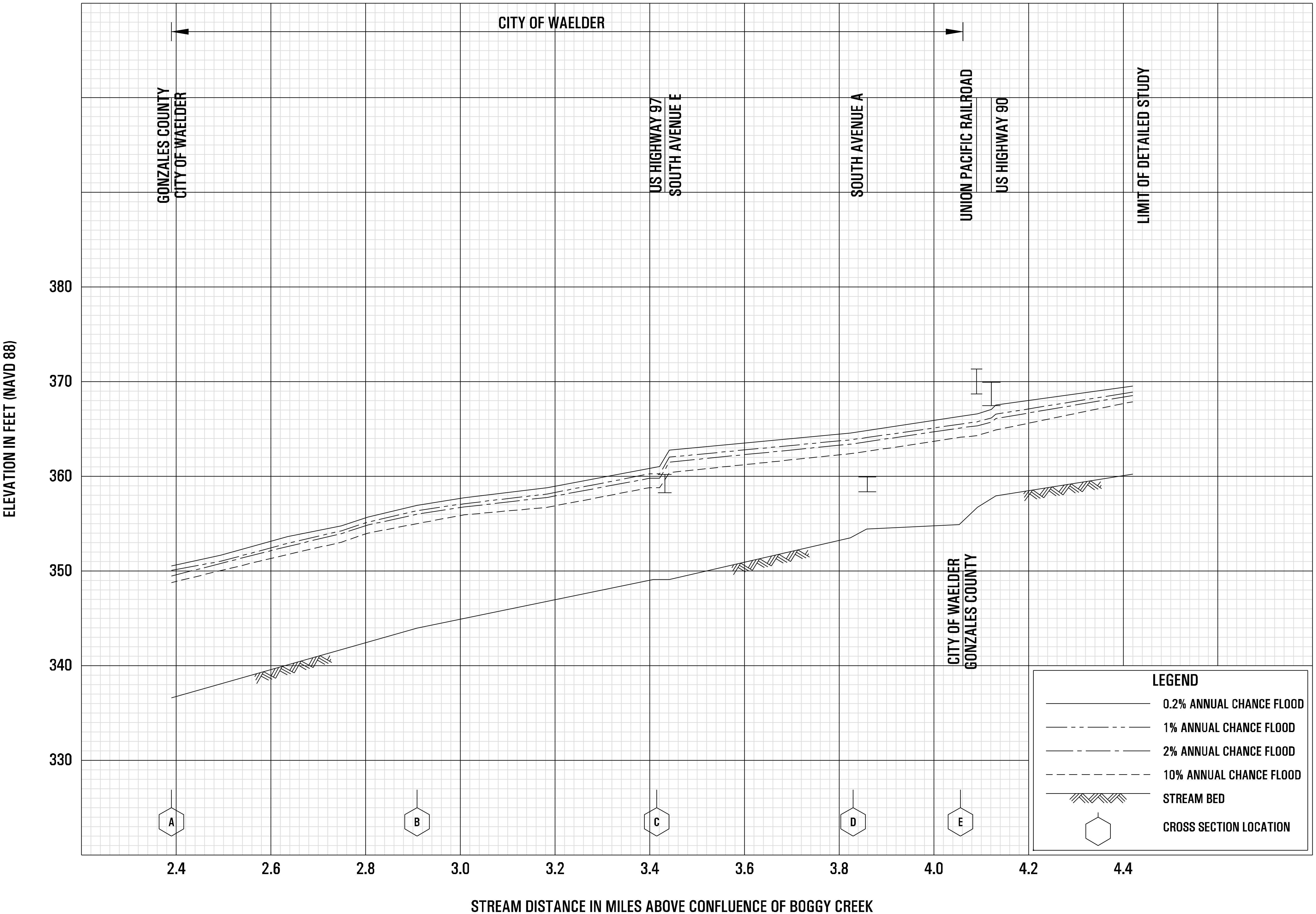


FLOOD PROFILES

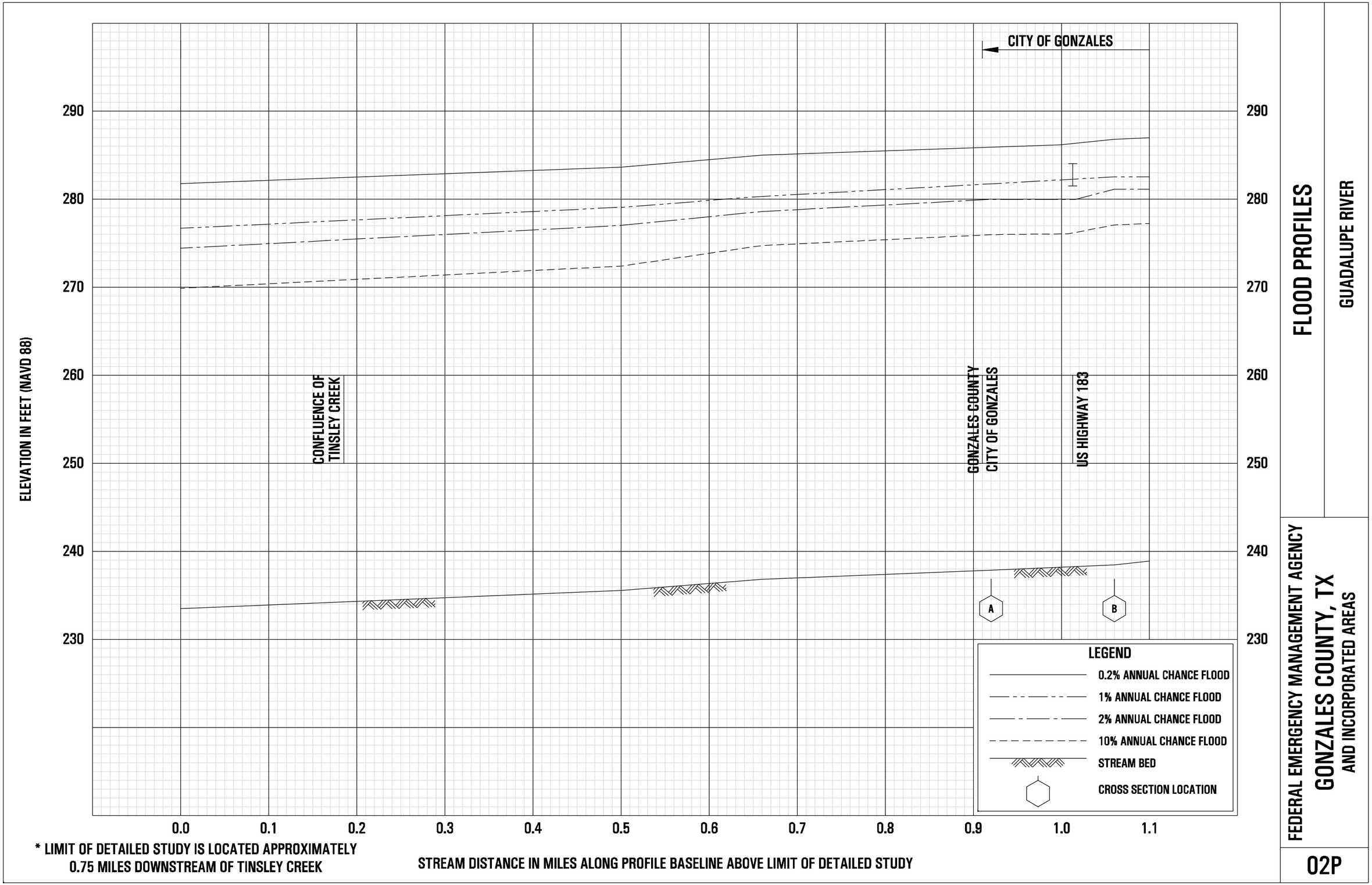
BALDRIDGE CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

GONZALES COUNTY, TX

AND INCORPORATED AREAS

01P



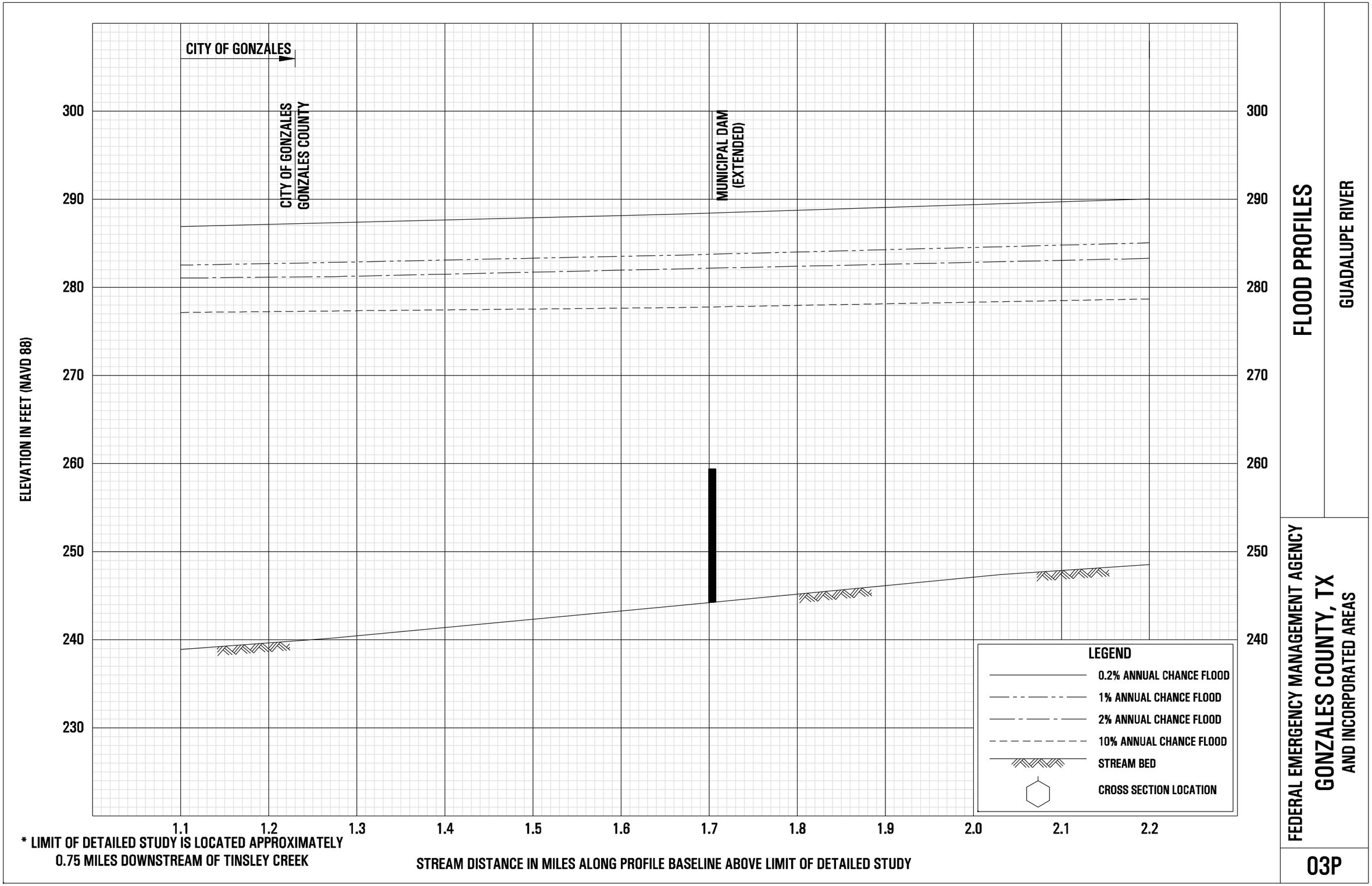
FLOOD PROFILES

GUADALUPE RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

GONZALES COUNTY, TX
AND INCORPORATED AREAS

02P



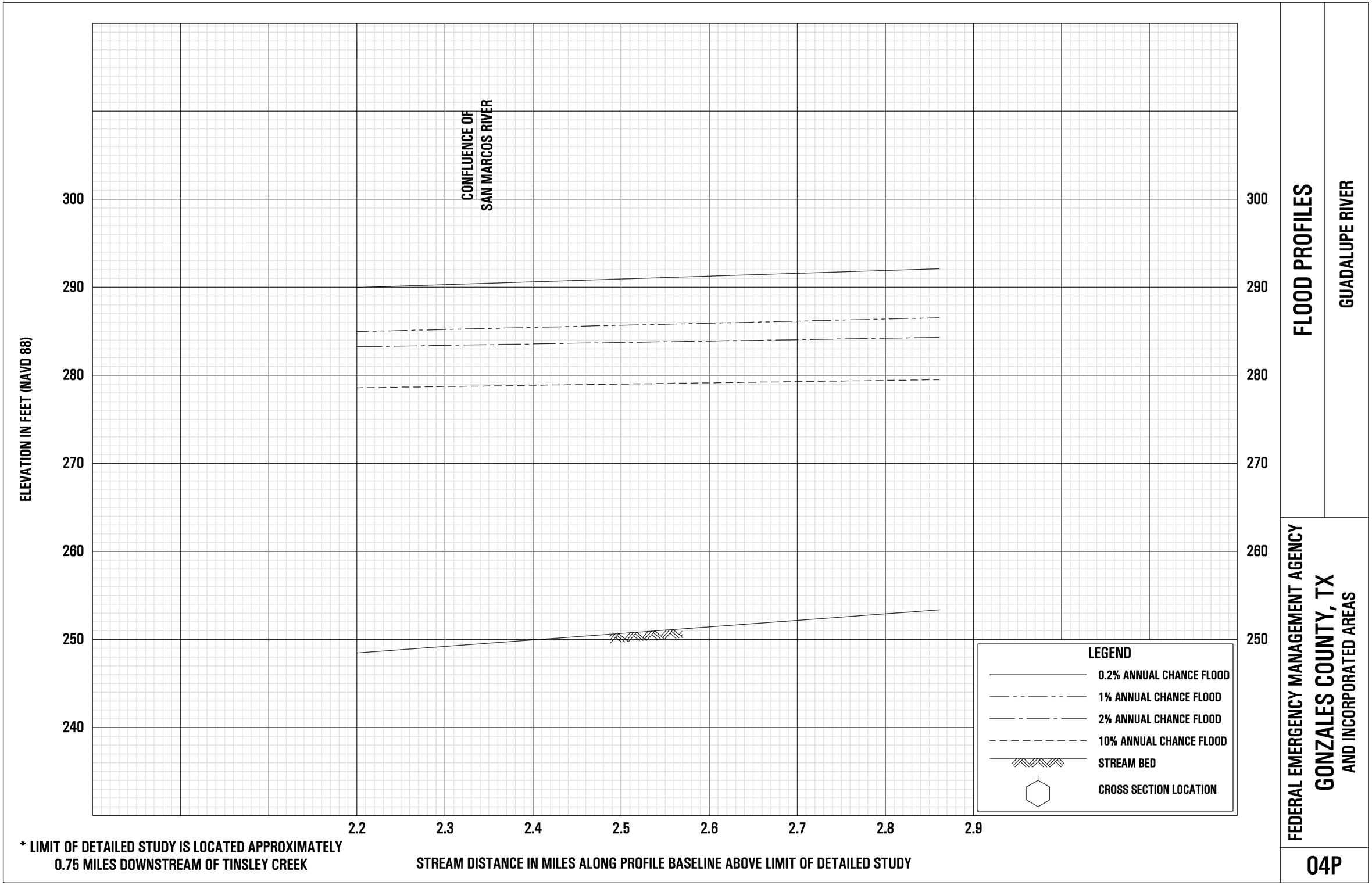
FLOOD PROFILES

GUADALUPE RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

GONZALES COUNTY, TX
AND INCORPORATED AREAS

03P



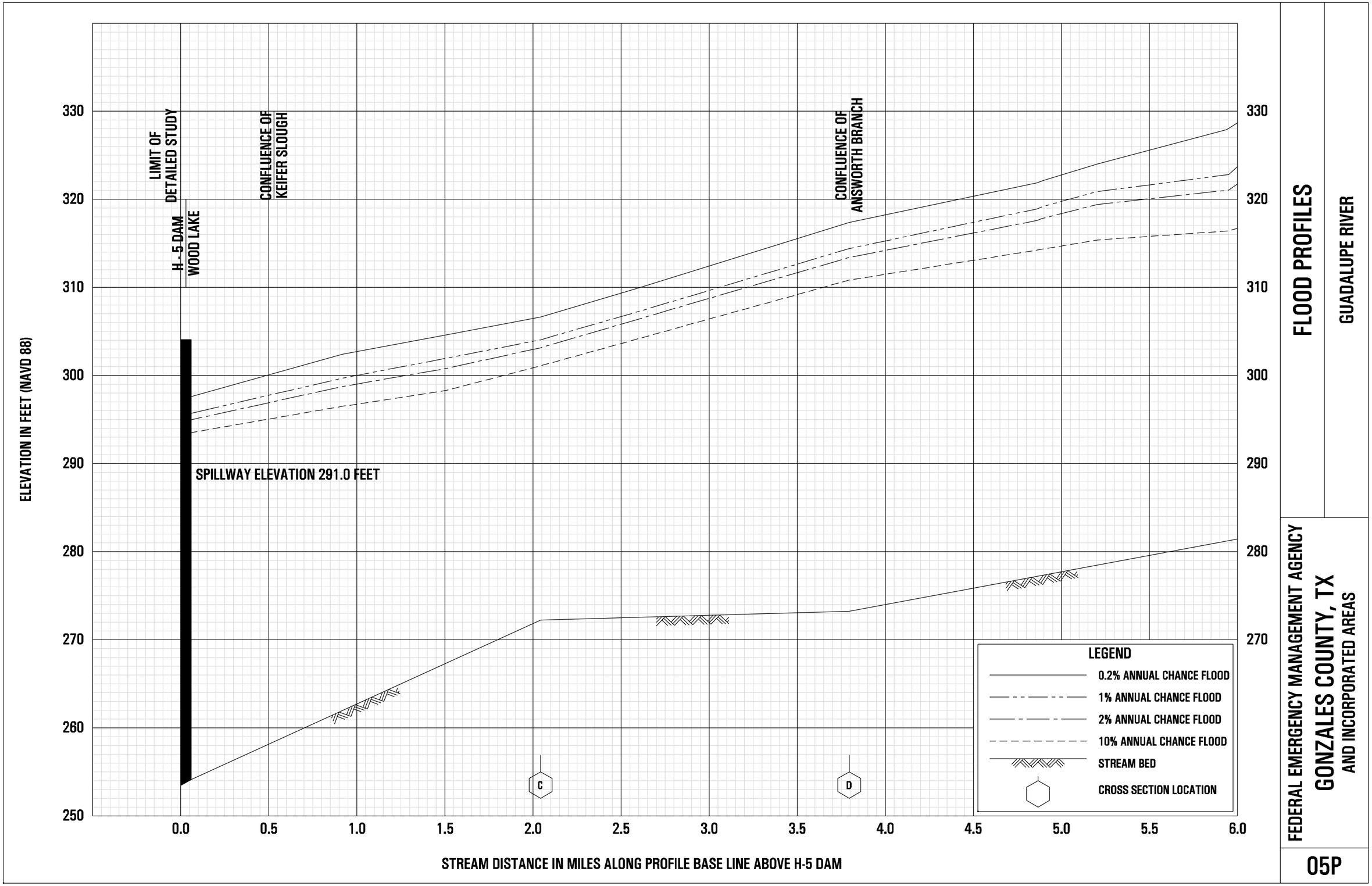
FLOOD PROFILES

GUADALUPE RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

GONZALES COUNTY, TX
AND INCORPORATED AREAS

04P



FLOOD PROFILES

GUADALUPE RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

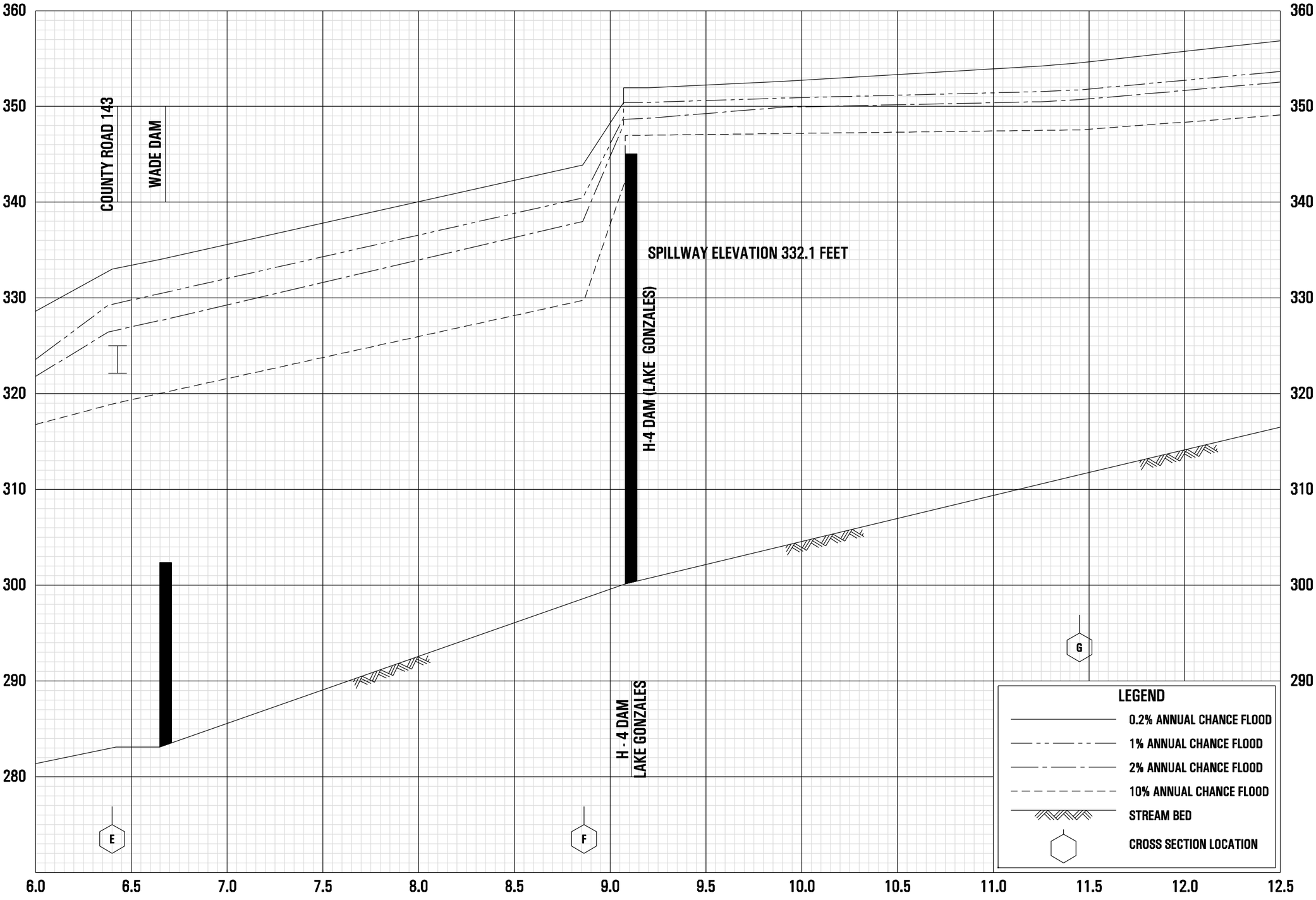
GONZALES COUNTY, TX

AND INCORPORATED AREAS

05P

FLOOD PROFILES

GUADALUPE RIVER

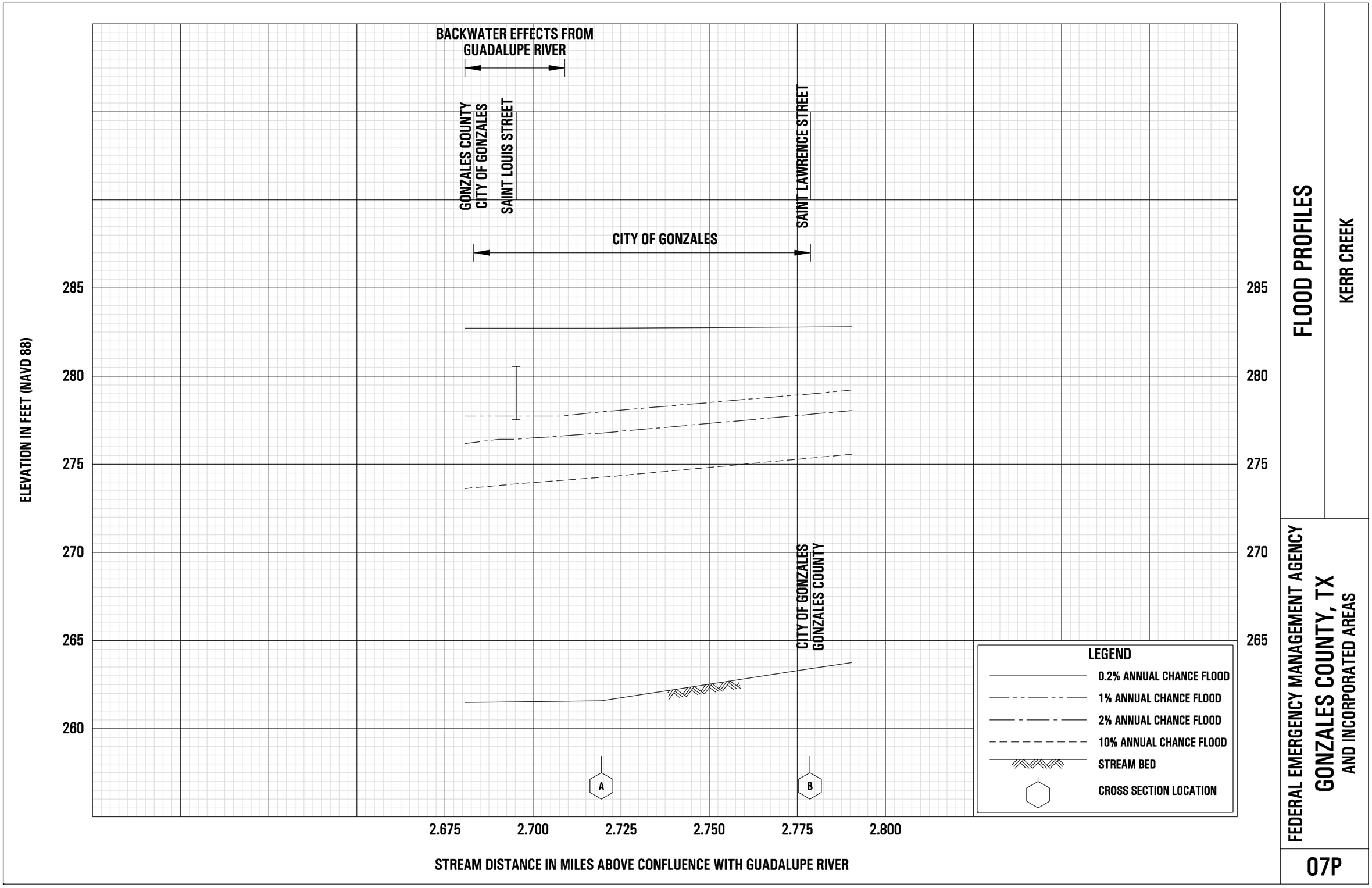


FEDERAL EMERGENCY MANAGEMENT AGENCY

GONZALES COUNTY, TX

AND INCORPORATED AREAS

06P



FLOOD PROFILES

KERR CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

GONZALES COUNTY, TX
AND INCORPORATED AREAS

07P

GONZALES COUNTY UNINCORPORATED AREAS

CONFLUENCE WITH GUADALUPE RIVER

US HIGHWAY 90 ALT

ELEVATION IN FEET (NAVD 88)

320
310
300
290
280
270
260
250
240
230

0
2000
4000
6000
8000
10000
12000
14000
16000
18000
20000
22000
24000
26000

STREAM DISTANCE IN FEET ABOVE CONFLUENCE WITH GUADALUPE RIVER

A
B
C

LEGEND

- 0.2% ANNUAL CHANCE FLOOD
- 1%+ ANNUAL CHANCE FLOOD
- 1% ANNUAL CHANCE FLOOD
- 2% ANNUAL CHANCE FLOOD
- 4% ANNUAL CHANCE FLOOD
- 10% ANNUAL CHANCE FLOOD
- STREAM BED
- CROSS SECTION LOCATION

FLOOD PROFILES

SAN MARCOS RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

GONZALES COUNTY, TX

AND INCORPORATED AREAS

GONZALES COUNTY UNINCORPORATED AREAS

ELEVATION IN FEET (NAVD 88)

320
310
300
290
280
270
260
250
240
230

26000 28000 30000 32000 34000 36000 38000 40000 42000 44000 46000 48000 50000 52000

STREAM DISTANCE IN FEET ABOVE CONFLUENCE WITH GUADALUPE RIVER

D

E

LEGEND

- 0.2% ANNUAL CHANCE FLOOD
- 1%+ ANNUAL CHANCE FLOOD
- 1% ANNUAL CHANCE FLOOD
- 2% ANNUAL CHANCE FLOOD
- 4% ANNUAL CHANCE FLOOD
- 10% ANNUAL CHANCE FLOOD
- STREAM BED
- CROSS SECTION LOCATION

FLOOD PROFILES

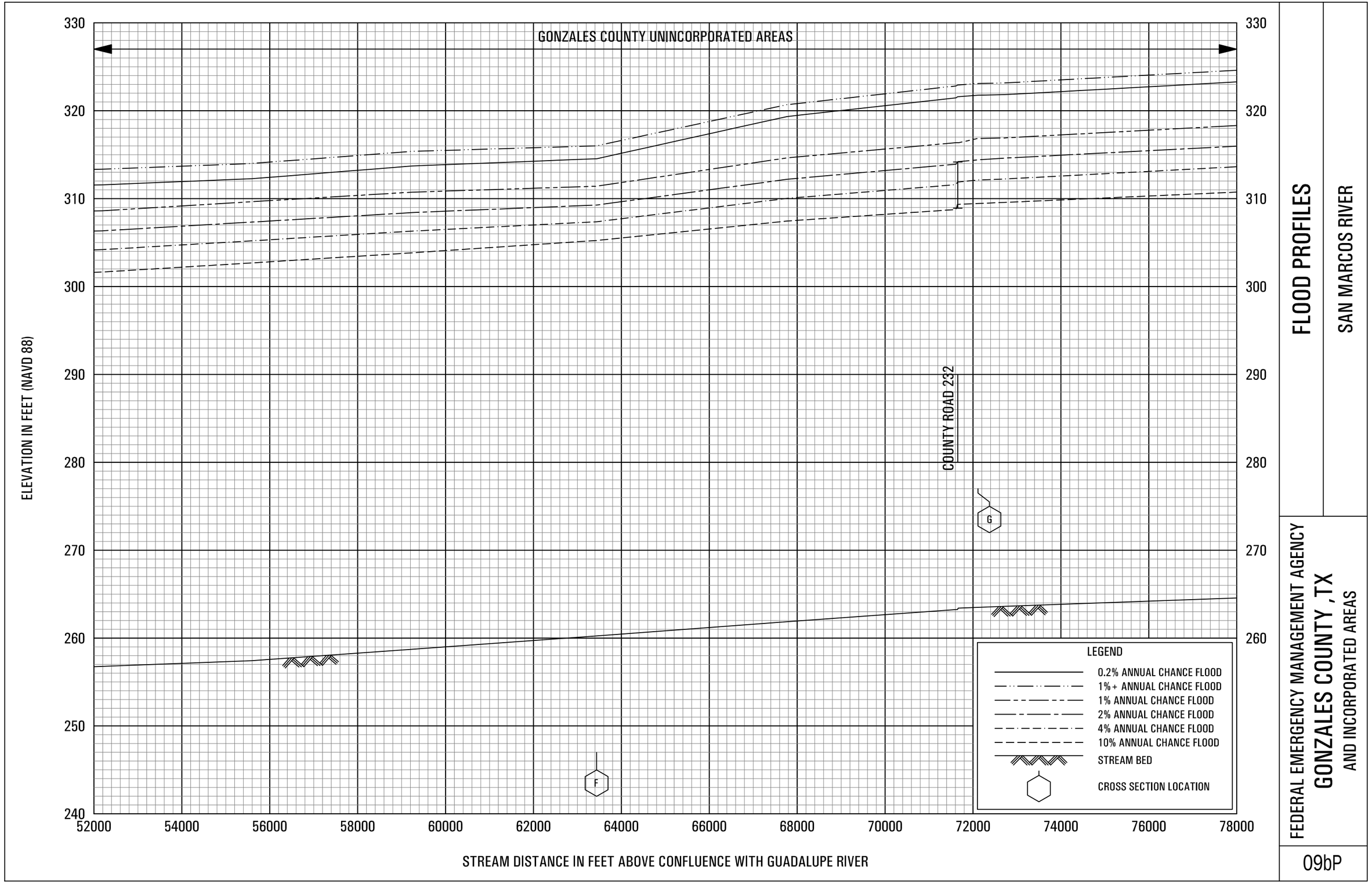
SAN MARCOS RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

GONZALES COUNTY, TX

AND INCORPORATED AREAS

09aP



FLOOD PROFILES

SAN MARCOS RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

GONZALES COUNTY, TX

AND INCORPORATED AREAS

09bP

GONZALES COUNTY UNINCORPORATED AREAS

ELEVATION IN FEET (NAVD 88)

340
330
320
310
300
290
280
270
260
250

78000 80000 82000 84000 86000 88000 90000 92000 94000 96000 98000 100000 102000 104000

STREAM DISTANCE IN FEET ABVOE CONFLUENCE WITH GUADALUPE RIVER

H

I

LEGEND

- 0.2% ANNUAL CHANCE FLOOD
- 1%+ ANNUAL CHANCE FLOOD
- 1% ANNUAL CHANCE FLOOD
- 2% ANNUAL CHANCE FLOOD
- 4% ANNUAL CHANCE FLOOD
- 10% ANNUAL CHANCE FLOOD
- STREAM BED
- CROSS SECTION LOCATION

FLOOD PROFILES

SAN MARCOS RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

GONZALES COUNTY, TX

AND INCORPORATED AREAS

09cP

GONZALES COUNTY UNINCORPORATED AREAS

ELEVATION IN FEET (NAVD 88)

350
340
330
320
310
300
290
280
270
260

98000 100000 102000 104000 106000 108000 110000 112000 114000 116000 118000 120000 122000 124000

STREAM DISTANCE IN FEET ABOVE CONFLUENCE WITH GUADALUPE RIVER

PARK ROAD K

COUNTY ROAD 2091

H

J

K

LEGEND

- 0.2% ANNUAL CHANCE FLOOD
- 1%+ ANNUAL CHANCE FLOOD
- 1% ANNUAL CHANCE FLOOD
- 2% ANNUAL CHANCE FLOOD
- 4% ANNUAL CHANCE FLOOD
- 10% ANNUAL CHANCE FLOOD
- STREAM BED
- CROSS SECTION LOCATION

FLOOD PROFILES

SAN MARCOS RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

GONZALES COUNTY, TX

AND INCORPORATED AREAS

09dP

GONZALES COUNTY UNINCORPORATED AREAS

ELEVATION IN FEET (NAVD 88)

360
350
340
330
320
310
300
290
280
270

124000 126000 128000 130000 132000 134000 136000 138000 140000 142000 144000 146000 148000 150000

STREAM DISTANCE IN FEET ABOVE CONFLUENCE WITH GUADALUPE RIVER

L
M
N

LEGEND

- 0.2% ANNUAL CHANCE FLOOD
- 1%+ ANNUAL CHANCE FLOOD
- 1% ANNUAL CHANCE FLOOD
- 2% ANNUAL CHANCE FLOOD
- 4% ANNUAL CHANCE FLOOD
- 10% ANNUAL CHANCE FLOOD
- STREAM BED
- CROSS SECTION LOCATION

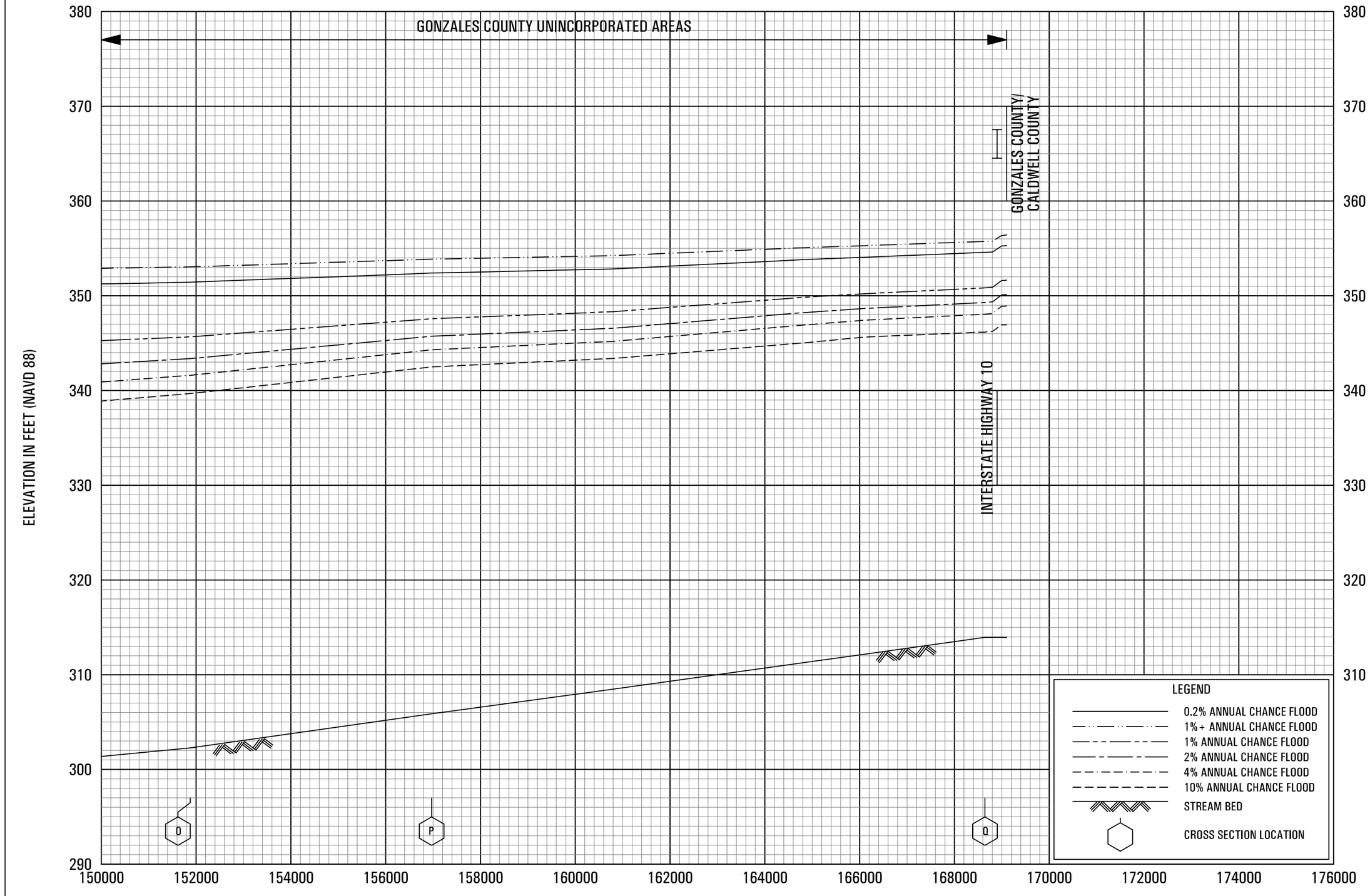
FLOOD PROFILES

SAN MARCOS RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

GONZALES COUNTY, TX
AND INCORPORATED AREAS

09eP



FLOOD PROFILES

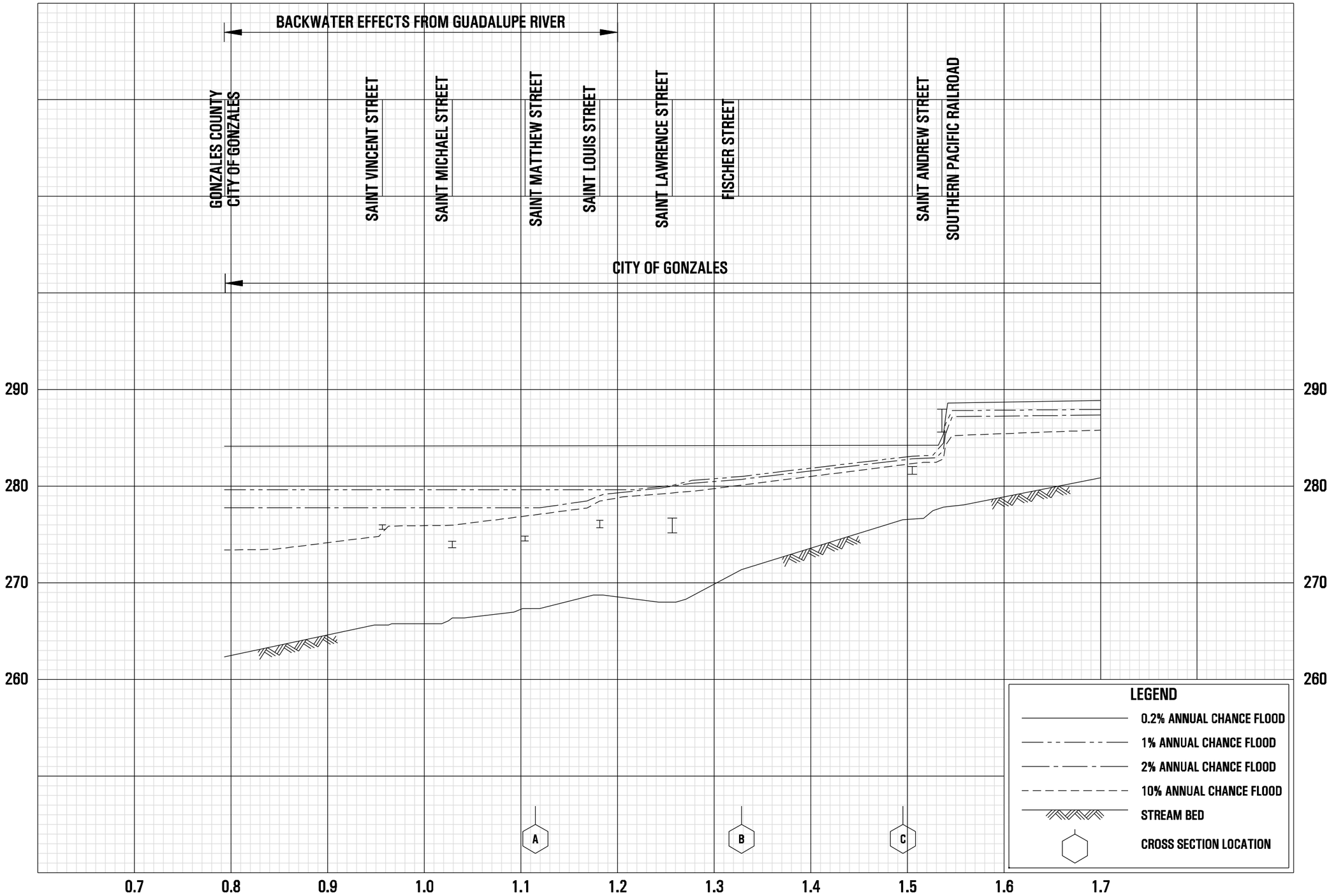
SAN MARCOS RIVER

FEDERAL EMERGENCY MANAGEMENT AGENCY

GONZALES COUNTY, TX

AND INCORPORATED AREAS

09fP



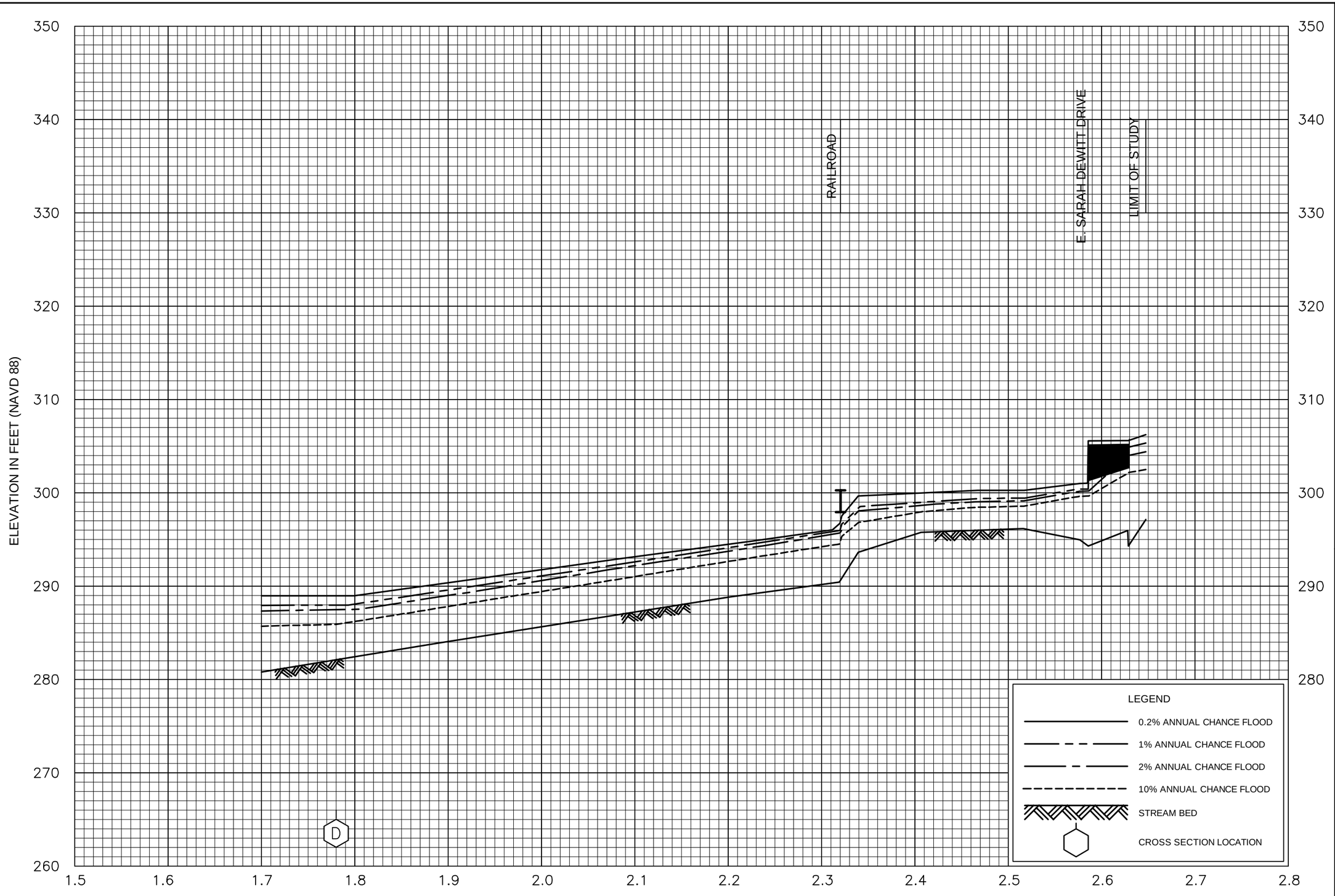
FLOOD PROFILES

TINSLEY CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

GONZALES COUNTY, TX
AND INCORPORATED AREAS

10P



FLOOD PROFILES

TINSLEY CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

GONZALES COUNTY, TX
AND INCORPORATED AREAS

FLOOD PROFILES

WAELDER BRANCH

CITY OF WAELDER

GONZALES COUNTY
CITY OF WAELDER

RALPH BUNCH
SOUTH AVENUE H

SOUTH RAILROAD STREET
UNION PACIFIC RAILROAD
US HIGHWAY 90

NORTH FIRST STREET

NORTH SECOND STREET

NORTH THIRD STREET

NORTH FOURTH STREET

NORTH FIFTH STREET

ELEVATION IN FEET (NAVD 88)

390
380
370
360
350
340
330

NOTE: THE 2% ANNUAL CHANCE FLOOD PROFILE ELEVATION IS TOO CLOSE TO THE 1% ANNUAL CHANCE FLOOD PROFILE ELEVATION TO BE SHOWN SEPARATELY

A
B
C
D
E
F

LEGEND

- 0.2% ANNUAL CHANCE FLOOD
- 1% ANNUAL CHANCE FLOOD
- 2% ANNUAL CHANCE FLOOD
- 10% ANNUAL CHANCE FLOOD
- STREAM BED
- CROSS SECTION LOCATION

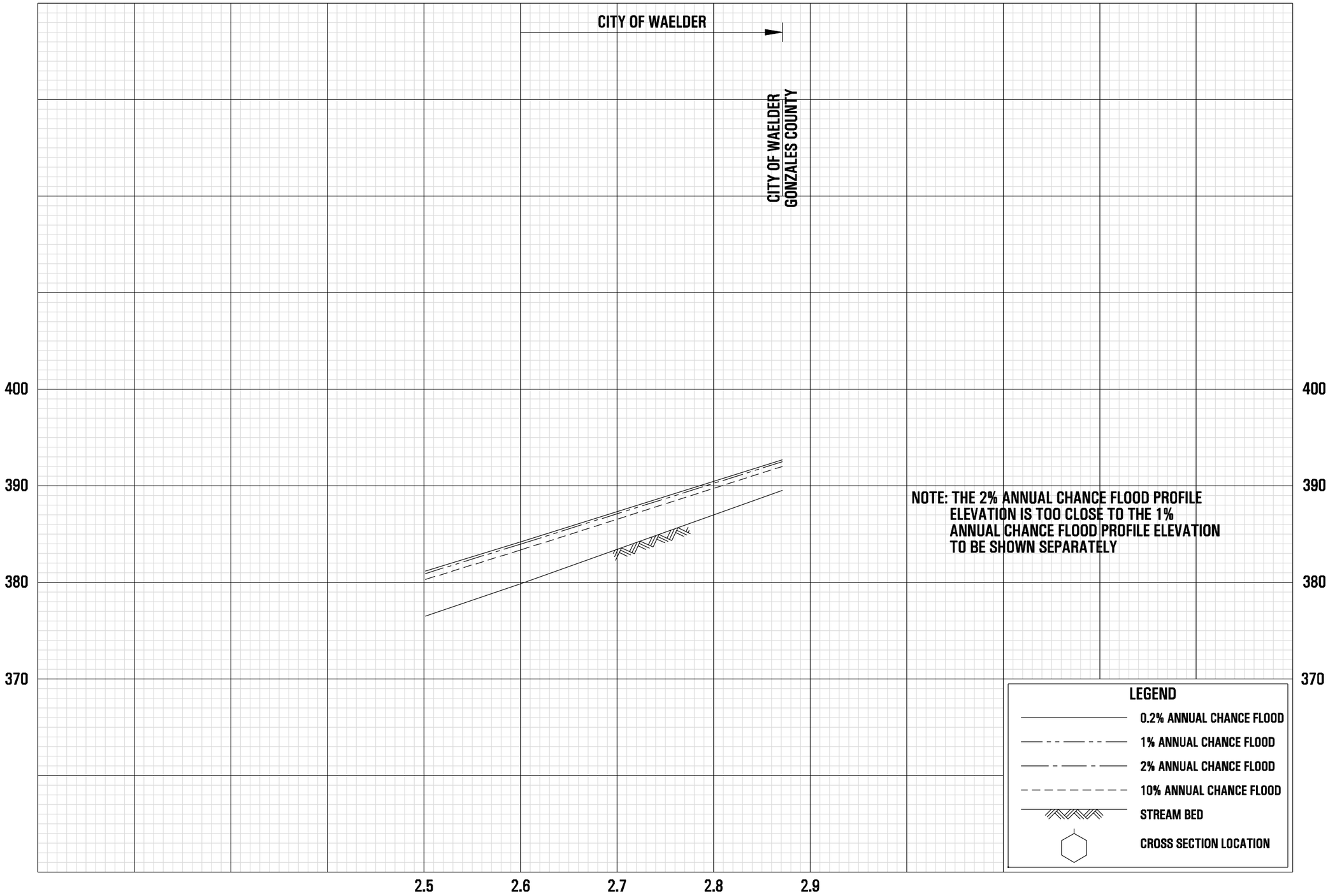
1.5 1.6 1.7 1.8 1.9 2.0 2.1 2.2 2.3 2.4 2.5 2.6

STREAM DISTANCE IN MILES ABOVE CONFLUENCE WITH BALDRIDGE CREEK

FEDERAL EMERGENCY MANAGEMENT AGENCY

GONZALES COUNTY, TX
AND INCORPORATED AREAS

12P



FLOOD PROFILES

WAELDER BRANCH

FEDERAL EMERGENCY MANAGEMENT AGENCY

GONZALES COUNTY, TX
AND INCORPORATED AREAS

13P